Practicall Husbandry IMPROVED:

OR,

A Discovery of infinite Treasure,

Hidden since the Worlds beginning.

VVhereunto ALL MEN of VVHAT DEGREE SOEVER, are friendly invited to bee SHARERS with the DISCOVERER.

Written by *GABRIEL PLATTES*, and now published for the Generall Good and Benefit of the COMMONWEALTH.

PROV. 13. 11.

Wealth gotten by Vanity shall bee diminished; But hee that gathereth it by Labour shall Prosper.

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TO

His VVorthy Friend Mr. *William Engle-bert* Eſquire, Health and Happineſſe.

SIR,

I Have read of an ancient cuſtome uſed amongſt the Heathens, that when they brought their ſacrifices into the Temple, they brought therewith all ſuch receits of medicines for diſeaſes, as they had found out by experience, and there delivered them to be preſerved for the perpetuall benefit of their poſterity; their conſciences perſwading them, that their Sacrifices would be better accepted therefore, and that it was a wicked deed to let ſuch knowledge die with them, which might do ſo much good to others. As for the action, I think ſo well of it, as I am minded to make it my pattern: and therefore deſire that under your patronage I may bring in my receit, containing a medicine, no doubt, for innumerable diſeaſes; as taking away the fundamentall cauſe thereof, to wit, indigence: which by cauſing of the mindes ſadneſſe produceth Melancholyous bloud and humours, the fountain of the diſeaſes of theſe times: the diſeaſes thus cauſed kill by diſtance of time; cordials do but deferre the time: there is no approved medicine but this, in an over-peopled Common-wealth; to wit, good improvements of the earth; which may be effected by the new inventions contained in this Book: and there is nothing wanting but willing mindes to make this Countrey the Paradiſe of the World. If Gentle men

tlemen of quality would be pleaſed to begin firſt, and to lay the corner Stone of this building, all would follow without queſtion: for that gaine, the Load-ſtone of the World, being laid a little open by practiſe, would draw the reſt: there is no cauſe that I know why they ſhould be ſlack in it: there be a great number of Pariſhes within my knowledge, and without queſtion infinite more that I know not, where the Landlord by laying out of his money upon theſe improvements may gain double as much, as by purchaſing of new Lands: alſo the Parſons Tithes of many things may be doubled; and the inhabitants, though much increaſed, may live better then before. If this be not a better cure for an over-peopled Common-wealth, then to make violent incurſions upon others territories, as is too frequent, I refer the matter to all mens judgments: the whole world is all of one Gods making, and no queſtion is or ſhould be one body Politique; wherein to uſe Phlebotomie when there is no other means ready, is as fooliſh as to doe the ſame thing in Bodies naturall, alſo there is no diſparagement to men of quality to take this work in hand: for many men of eminent dignity have laboured in theſe affaires, amongſt which let *Diocleſian* the Emperour ſerve for brevities ſake in this place: who when hee had reſigned his Scepter, could find no ſuch pleaſure and contentment in any thing, as he did in the planting and graffting of trees, and in the Sowing, and Setting of profitable Seeds: and ſurely it is a wonderfull delectation to ſee that the earths fatneſſe (being the Treaſure, and indeed the Fountain of all Treaſure and Riches in the World,) may be transformed into what form the Workman liſteth: This Treaſure is diſcovered more at large in the Chapter concerning the fertilizing of Land: and is included plentifully in every Element: *viz.* in the Aire, which is manifeſt in that the *Camelion* an Animall, and the

Semper-

Semper-vive a Plant, can live and grow in magnitude and ponderoſitie without touching any other Element: alſo in the Water by the infinite increaſe of Fiſhes: alſo in the earth by the infinite and inexhauſtable treaſure which it produceeth continually: onely in the earth it is frequently miſcompounded: the reaſons are declared at large in this Book: for it conſiſteth of a double nature, the one Terreſtriall, the other Celeſtiall or Ætheriall: if either of theſe predominate, then the earth is barren and bringeth forth nothing that is beneficiall: for if the Ætheriall part be not of force and quantitie ſufficient, by the heat of the Sun, to lift up the Terreſtriall part, then no fruit thereof ſpringeth. Again, if the Terreſtriall part be not of force to coagulate and harden the other into profitable fruits, then all is turned into ſmoake, like the accuſtomed works of Alchymiſts: all the skill conſiſteth in the right compounding of theſe two ſubſtances, which in many places, may be done with ſuch facilitie as is wonderfull: the reaſons hereafter declared are ſufficient to turne Plow-men into Philoſophers, and to make them to excell their predeceſſors, even as a learned Phyſician excelleth an Emperick. For though many notable improvements have been heretofore found out, yet they came more by accident then by good grounds of reaſon: yet infinitely beneficiall, and therefore not to be deſpiſed: for he that found out the way of fertilizing of Land with Lime or Marle, (though by accident) did a more charitable deed in publiſhing thereof, then if he had built all the Hoſpitalls in *England*: for the one feedeth and cloatheth a few hungry and naked perſons, the other enableth an infinite number both to feed and cloath themſelves and others: theſe things have moved me to beſtow much time and charges in theſe affaires; deeming my attempt to be the moſt excellent that wit can be employed about; for that theſe

knowledges are more durable then common riches: and no Lawyer can make an eſtate ſo indefeſible as an approved and profitable experiment is: the reaſon why I choſe you to be my Patron, is your ripeneſſe of Judgment in affaies of nature: you being a Gentleman that hath ſpent threeſcore years time in invention to doe good to the State and Common-wealth; and that hath accompliſhed more profitable experiments than any man in theſe latter ages: if witneſſe be expected, let the noble and bountifull gift of Queen *Elizabeth*, for your full accompliſhment of your works projected and never accompliſhed formerly by any, ſerve the turn. To conclude, my deſire is, that you and all Readers would be pleaſed to conſider, that my time being ſpent in practicall experiments may well deny mee Scholaſticall Oratorie: and therefore I deſire no more of you, or of any Reader, but that my good meaning may ſerve in ſtead of *Ciceroes* Oratorie, to ſmooth over and dawb up my imperfections that way, and that the paines and charges being mine, and the profit being to redound to the Readers, if they be ſo pleaſed, may ſerve in ſtead of *Demoſthenes* his eloquence to perſwade them to take them thankfully.

So I Humbly take my leave

Your bounden ſervant,

GABRIEL PLATTES.

The Contents.

CHAP. I.

Wherein is manifeſtly ſhewed the nature of the ſubject which wee are to worke upon, viz. the terreſtriall Globe, conſiſting of earth and water: the ſituation of it, and the ſecond cauſes of its ſtabilitie.

CHAP. II.

Wherein is plainly ſhewed, how workmen may be provided for the accompliſhing of the enterpriſe.

CHAP. III.

Wherein is manifeſtly ſhewed, how tooles and inſtruments may bee provided the moſt commodious way for the worke.

CHAP. IV.

Wherein is ſhewed, how food, and maintenance for the workmen may be provided, by the induſtrie of the ſaid workmen.

CHAP. V.

Wherein is ſhewed, that the common way in Husbandry at this time uſed, will produce in length of time, nothing but povertie and beggery.

CHAP. VI.

Wherein is ſhewed that the new Inventions and Improvements contained in this Book, will produce maintenance for all, though they ſhall grow never ſo numerous; whereby the Frontiſpice of this Book is cleared from impoſture, in that it proclaimeth the treaſure to be infinite.

CHAP. VII.

Wherein is declared the manner how to make barren land

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CHAP. X.

Wherein is manifeſtly ſhewed the cauſe of the rotting of Sheep, with the prewention and cure.

CHAP. XI.

Wherein is ſhewed, that in theſe Ages, Inventions to ſave the number of mens works, are not profitable to a Commonwealth overcharged with people, but rather the contrary.

CHAP. XII.

As for the Objections againſt any thing contained in this Book, to free my ſelf from all partialitie toward my owne ſide, I have here ſet them downe all punctually as they have been objected by ſeverall Husbandmen, and others, in ſundry conferences.

A DISCOVERIE OF INFINITE TREASURE hidden ſince the worlds beginning, whereunto all men, of what degree ſoever, are friendly invited to be *ſharers with the Diſcourſer* G. P.

I Muſt needs confeſſe that divers of theſe inventions and improvements contained in this Booke, are not totally hidden from the world at this day: yet in regard that ſome of them are onely known to my ſelf, others not generally known, and all of them not practiſed generally; but the profit thereof which might accrue to the Common wealth, hath hitherto beene loſt; I have been bold to intitle the Book, *A Diſcovery of infinite Treaſure, &c.* for that the intent of the publiſhing thereof is, that all in generall might receive benefit thereby, and that they might be ſatisfied ſo fully before hand, that they might joyn together with one conſent to accompliſh

the work more ſpeedily for the generall good of all that are preſent and alive; and alſo for the generall good of their poſteritie, whoſe happineſſe all men are bound to indeavour themſelves by their providence to further; though it ſhould be ſome charges and labour extraordinarie: for by this meanes ſhall they ſhew themſelves to be more like to the Creator of all things, who provideth for all Ages, as well as for the preſent time. If any one ſhall carpe at any thing conteined in this Book; let him be pleaſed to call to minde the old ſaying, viz. That a given Horſe is not to be looked in the mouth, eſpecially when he hath coſt ſo deare to the giver. I muſt needs confeſſe that here is neither Stile nor Compoſure anſwerable to the worth of the ſubject: for which I crave pardon, in regard that my time hath been ſpent in action and practiſe, and not in the Schooles. This Book is publiſhed for thoſe which through their debonere diſpoſition wil accept the Authors good meaning, though it were but painted with a coale; and for ſuch as will take a little paines to ſpell and put together the ſame themſelves, and expound it to the beſt advantage for the generall good for which it was intended: to pleaſe all is a thing impoſſible, for that very reaſon it ſelf, which doth, or at leaſt ſhould rule their pleaſures, differeth according to the conſtitution of the bodies, and alſo according to the Climates wherein reaſonable creatures live; which becauſe it may ſeeme ſtrange, I will demonſtrate by ſome few experiments amongſt many. As for the Climate, the oppoſition in the determination of divers controverſies, doth ſufficiently teſtifie: as for the finall determinations of controverſies in ſeverall Climates differing one from another, it doth manifeſt the other: for the firſt, it is found that where a queſtion ariſeth, there every one diſputeth according to his fancie, his conſtitution cauſing his will, and his will cauſing his braines to invent, and forge arguments to make good that which he deſireth, be it good or evil: as for the ſecond, the Climate differing cauſeth the Major part of the Aſſembly to agree upon a determination which ſorteth with the conſtitutions of the bodies in that Climate: for more

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plaine demonſtration hereof, let us obſerve firſt ſeverall determinations, in ſeverall Climates, of the ſame queſtion; ſecondly, let us obſerve ſeverall determinations in one and the ſame Climate of the very ſame queſtion: as for the firſt, the different determinations betwixt us and the Southerne Countries, about having many wives or but one, ſheweth, that the Climates being hotter or colder, do ſway the mindes of the diſputants: as for the ſecond, the late law for the having of onely one wife, doth demonſtrate the coldneſſe of the Climate, together with the difficultie of acquiring of maintenance; both which ſway the mindes of the diſputants here; and as for riches, the things moſt deſired, are they not ſtriven for according to the naturall deſire of the parties affected to them? Is it not manifeſt that many wiſe and prudent men have deſpiſed multitude of riches and honours; and other have affected the ſame moſt earneſtly, and accompliſhed them with much danger and difficultie; and theſe have thought one another mad or fooliſh, for that they were of ſeverall opinions, cauſed by their divers conſtitutions which ſwayed their reaſons with ſuch violence, that their judgements were hood-winked? And is it not manifeſt alſo, that many miſchievous contentions have riſen between parties in the ſame Climate, and betweene ſeverall Countries in divers Climates, about frivolous queſtions, where neither partie hath had truth on their ſide, though they both thought they had it infallibly: like our hot *Apocalyps* men, and fierce expounders of *Daniel*, who are ſure, in their owne conceit, that they have ſuch divine revelations, that they cannot poſſibly be deceived. Of this nature are the moſt part of the deceptions in the world at this time; which are to be pitied rather then puniſhed, for that they differ from wicked intended deceptions; even as betweene chance-medley and wilfull murder: he that could undeceive the deceived by laying open to him his folly, might do more good in the world then all the lawes hitherto made: for men would not goe againſt reaſon rectified, unleſſe it were ſome few miſcreants. As for my part, my will is good; but I have neither much learning,

neither am made fit for it by nature: for the writing of theſe few lines hath prejudiced me in my health, more than many yeares ſpent in corporall practiſe: wherefore I deſire all Schollers to endeavour to performe my wants, and by their learning to fulfill my want of learning, and to ſtudie to promote my good intents: for I can but ſhew what I would ſay if I could ſpeake; and for their ſo doing their reward is ready: for I have knowne the Tithes in one pariſh improved twenty pound *per annum*, in one Parſons age, through his good perſwaſion to the people to be induſtrious in the planting and grafting of fruit-trees onely: and then the whole pariſh muſt needs gaine two hundred pound *per annum:* and there being in *England* about ten thouſand pariſhes, it may be conjectured what benefit may accrue for the generall good of all the Land, viz. about ten thouſand times two hundred pound *per annum*: and alſo what benefit may accrue, if all my inventions and improvements ſhall be generally put in practiſe, this being one of the leaſt of very many: alſo their honour, reputation and reſpect ſhall be doubled by furthering of this pious worke, whereby the working poore may be ſo well imployed, that the impotent poore will be eaſily mainteined; and for my requitall, I deſire no more, but that they will remember me and my poſteritie in their prayers for the heavenly benediction: as for other gratuitie, I am not ſo neceſſitated as to make begging letters, though I be not poſſeſſed of any great eſtate: for to deale plainly and truely with the world, I know no imperfection in my ſelfe, but that, if I were minded to acquire, governe, and conſerve a great eſtate with that trouble that ſome of my friends doe undergoe, I could have it; but not making that my *ſummum bonum*, I am reſolved, that unles it come with more eaſe, I had rather be without it: and herein I challenge no immunitie from being deceived like others; for my reaſon hath deceived me ſo many times, that I will truſt it no more, unleſſe it be confirmed and made manifeſt by experience; and if many more were of my mind, I ſuppoſe that the world would be leſſe fooled by conceits and fancies, and would not be deluded ſo ſottiſhly to ſtrive and

undoe

undoe themſelves in the breaking of the generall bond of peace. For particular fancies, it is a ſtrange thing to ſee the different diſpoſitions of men, yet all thinke they have good reaſon for what they doe: as may be ſeene by the laughing of *Democritus*, and the weeping of *Heraclitus*, at one and the ſame object; and perhaps another ſpectator would have beene angry at it; and a fourth being of a great minde and a large ſpheare, would have marvelled that rationall men ſhould be moved at all in their paſſions for ſuch triviall objects: and it is more ſtrange to ſee men deſtroy one another by warres and injuries for triviall fancies, and about matters of ſo ſmall moment: it argueth a meane love to God, when men will kill their own kinde, the wonderfull workmanſhip of Gods hands upon ſo ſlight grounds; it ſeemeth to me a very feaſible worke to rid the world of thoſe miſchievous contentions: for now that the Major part of the Princes are of good and peaceable diſpoſitions; What were it to joyne together ſo ſtrongly, that their power ſhould be irreſiſtable, and then the noiſe thereof would conquer the reſt without Drummes or Cannons; and Hallelujahs would come in their place: but in this worke the Schollers muſt play their part, elſe all will be worſe then it was before; for unles the world be unhoodwinked and ſhewed their follies every way, vices will abound by proſperitie, and love-ſonnets and fables will come in the place of Hallelujahs after a ſmall time: for I muſt needs confeſſe the truth, that at this time nature is ſo depraved, that proſperitie will cauſe deſtruction to the enjoyers thereof, unleſſe their judgements be ſo rectified, that they may doe the ſame things for love, that now they doe for feare and want: for want is now the beſt bridle to reſtraine vices, and therefore I have not indeavoured to my uttermoſt skill to bring plenty into the world upon a ſudden; but that they may have ſome ſowre ſawce to their ſweet meat, to keepe them from ſurfetting, yet is not the induſtry now required any intolerable thing; for that many of theſe improvements conſiſt of skill more then of bodily labour; ſo that no man hath cauſe to complaine, ſo long as his fare is

bettered: yet, howſoever, I could wiſh that this concluſion were put in practiſe, that experience might conclude the queſtion. For though rationall diſcourſes are ſubject to failings, yet they give good aime to hit the marke; which was the cauſe that I, having a ſtrong love to knowledge, addicted my ſelfe ſo ſtrongly to trie experiments, judging no knowledge perfect till it was thereby confirmed; yet I found that I proſpered beſt in thoſe practiſes, wherein I did firſt profoundly diſpute with my ſelfe *pro & contra*, and was not partiall, but objected and accuſed the worke as ſtrongly, as if my enemie had done it; and when I was remiſſe in this, I uſually fared juſt like a ſuitor in law, who telleth his Lawyer the faireſt part of his cauſe, and concealeth the worſt of it, till at length he is overthrowne in his own ſuite, though his Lawyer were honeſt and learned. I have ſometimes marvelled at my owne folly, in being carried with ſuch a ſwinge to doe others good, that I have prejudiced my ſelfe much by it: my fooliſh pity hath many times cauſed me to be wittingly and willingly ſoothed, and to part with my money, rather than to ſuffer another to be oppreſſed with extreme want and miſerie; and this I did not meerely for very charitie; for it is a double vice to make my ſelfe more honeſt then I am: for the chiefe cauſe was my proneneſſe to part with my money, being a thing I ſo little care for, finding a delectation rather in laughing at the parties miſtaking, in thinking he had abſolutely Tantalized me with hope of ſome great advantage, when God knowes, I never expected either gaine or principall againe. I know a man at this day of no meane capacitie, that having a good eſtate, but not yet very great, for whom I dare ſweare, that he would not change eſtates with the King of *Spaine*, whoſe dominions are ſo large, that the Sun never ſetteth in them; for before it goe downe in his Weſterne dominions, it riſeth in ſome part of his Eaſterne dominions: theſe things I would have to be taken notice of, to the intent that mens conceits ſhould be weakened, and that leſſe bloud ſhould be ſhed upon ſlight grounds, than hath beene heretofore. If any one ſay that warres and bloudſhed are juſt, for

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that it is for the maintenance of Religion and Lawes; I anſwer, that the fancies of the people in many ſeveral climates, if not in all, bore ſo great a ſway, not only in the making and compoſing of the Lawes and ſeverall Religions, but alſo in the imbracing and receiving of ſuch as ſorted with their fancies; that it ſeemeth not to be convenient, that the generall Law of Nature ſhould be violated for particular Lawes; nor that the fundamentall points in Religion, which command generall love to God and man, ſhould be neglected for particular differences. I am not ſure how this enterpriſe, for the bringing of the world into a regularitie and uniformitie, will proſper; for it may prove to be a fancie as well as the reſt: yet of all concluſions that are yet to be tried, I have the beſt fancie to it; for that the Major part of the world doe ſo much deſire it, and for the furtherance thereof, if it come to a dead lift, I will try my cunning for ſome engines of Warre extraordinary, which will make foule worke with ſuch miſcreants as ſhall oppoſe ſo worthy a worke, and will cauſe them to be trampled upon even as the mire in the ſtreets: but to publiſh theſe were an execrable villanie, unleſſe that a ſhort warre might be ſure to end all future quarrels. And what Prince ſoever ſhall firſt engage himſelf in this enterpriſe, his honour is ſure to be perpetuall; for that all tongues, both preſent and future, will teſtifie his heroicall and noble nature; and all hiſtories will record his fame to the worlds end; and this honour will be ſurely his, whether the deſigne hit or miſſe, for that he meaned well howſoever.

But to ſpeake according to my conſcience purely, I thinke that in regard it is a worke of God and not of man, when the divine pleaſure ſeeth it fit, it will be done by ſome weake meanes, whereby his glory ſhall be the more advanced; for men are ſo apt to be arrogant, that God Almightie will ſcarce truſt them with ſuch an honour. Now for that the old ſaying is true, That it is dangerous medling with edge tooles, I will ceaſe this diſcourſe, as ſeeming ſomewhat above my Spheare, and addreſſe my ſelfe to my plough againe; wherein I ſhall be ſure to doe good, or elſe no hurt;

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unleſſe it be to loſe my labour in taking paines for unthankfull perſons; or elſe to overſhoot my ſelfe, in ſtriving to bring in plentie and proſperitie into the world too ſuddenly, before they have learned to uſe it well, and to governe their fulneſſe with moderation; wherein I have not bin altogether remiſſe in my care, that the mutation might not be too violent and expeditious. And as for Religion, doth not a ſtrong conceited Papiſt, and a ſtrange conceited Proteſtant, thinke one another to be mad, and deluded by their fancies? and doth not a Iew thinke the ſame by them both? and doth not a Turke thinke the like by all the three? and doth not a learned Pagan thinke the like by all the reſt, being himſelfe madder then any of them? Amongſt all Religions which I have peruſed and looked into, which are not a few, I finde that the Chriſtian Religion doth manifeſt it ſelfe to come from God himſelfe, by the good diſcipline thereof, and alſo by the admirable conſolation which it giveth to men in adverſitie and affliction, and at the very houre of death; thereby ſhewing it ſelfe to be the very ſalve of God who is all mercy and pitie: yet I could wiſh that Chriſtians ſhould not be ſo violent in mainteining it by bloudſhed, as they are, but rather take another way more powerfull, and leſſe prejudiciall to the generall good: alſo I could wiſh that the reſt would looke into thier follies, and not be ſo ready to break the generall bond of peace, and great Law of Nature, for their particular fancies. For if any Scholler ſhould take upon him to mainteine by his Logicke that men might lawfully hate one another, if they ſhould differ from them in opinion; me thinkes I durſt undertake him, and would make no great doubt with my ſmall learning to involve him into an unavoidable abſurditie; for if this might be done, it would be concluded, that there might be leſſe love in the world then is at this preſent, which in my conceit is a thing that needs not: for the law of Nature doth complie with the generall profite, which this doctrine doth thwart extraordinarily; thereby ſhewing it ſelfe to be falſe and frivolous.

And for a full demonſtration of my meaning concerning the

the great Law of Nature: I affirme it is that which forbiddeth any man to doe that thing, which is prejudiciall to the generall good: which is more manifeſt in that every one that doth ſuch things, doth hide the ſame, either by doing it privily, or by covering the ſame with pretences: thereby ſhewing that his conſcience doth forbid him all the while he is in doing it, unleſſe it be where the conſcience is not rightly informed: for then the Conſcience ſtingeth not at all, as it is manifeſt by the Pagans, who thought they did God good ſervice in martyring of the Chriſtians; and alſo by the people who thought the like in killing the Prophets, Apoſtles, and Chriſt himſelfe.

For the Conſcience is guided by the ſcience; if the ſcience be a conceited fancie, then the Conſcience is quiet; though it provoke men to doe execrable actions.

But how men ſhould be ſo blinded to doe things againſt the generall good, ſeemeth to me a ſtrange thing; in regard that all Religions agree in this point, that we are not to doe that to another, which we would not have done to our ſelves: Now who would have himſelfe killed, or injured, for his private opinion? therefore in my conceite, he ought not to doe the ſame to another, much leſſe to deſtroy the wonderfull workmanſhip of God for that it pleaſeth not his fancie.

If any man ſhould make a pot, or a glaſſe, or other whimſey; he would take it ill if his inferiour ſhould breake the ſame, for that it pleaſeth not his fancie.

Therefore why ſhould he thinke that he can pleaſe God Almightie, in doing a thing of the verie like nature?

I have made this tedious digreſſion, not for any great skill in Divinitie that I pretend to have; but to ſhew to the world, that I am as others are, a little troubled with my phantaſticall conceit; and wiſh, as others doe, that all the world were of my opinion: for then we would not for any particular opinion, whatſoever, forgoe the great proſperitie and happineſſe, which peace would bring us; but would breake our ſwords, and inſtruments of Warre, into Plough-

ſhares, and other inſtruments of Husbandrie; and would ſpend the charges of Gunpowder, Shot, &c. in the building, repairing, and beautifying of Churches; and turne the noiſe of Drummes and Cannons, into Hallelujahs; and would according to my naturall proneneſſe, try concluſion, whether Peace, or Warre, were better.

Yet howſoever it cometh to paſſe in the generall, I would be glad that this particular Kingdome, would be a little ruled by my fancie; which in this point is not different from the vulgar, to whom every contrarie opinion ſeemeth frivolous, and ridiculous: as the opinion of thoſe doth to me, who contend for trifles, and had rather forgoe their future happineſſe, than loſe an inch of ground in ſtanding out for their ſtrong conceited opinions: yea, verily they ſeeme to me as ridiculous, and childiſh, as for Boyes to fall together by the eares, and teare one anothers clothes, and give one another bloudy noſes about Cherry-ſtones, points, pinnes, and other trifles which they play for.

Wherein, I am juſt like the Inhabitants in *China*, who ſuppoſe that they have two eyes, and all others have but one; therein manifeſting their ſtrong conceit of their owne wiſedome; for that they thinke they know more than all the World beſides.

Yet I conceive my good meaning may beare me out in it; for that I conceiving my ſelfe to ſee the Kingdome poſt away apace into povertie and want, am willing to ſhew my good will for the prevention of ſuch a miſchiefe.

And I am not wedded to my fancie ſo much, but that I wiſh every one to take better counſell when he may have it, and in the meane time, to accept of mine, rather than of worſe.

And where good counſell is wanting, let every one tell himſelfe the old fable of *Æſope*, concerning the contention betwixt the members and the belly; and let him ſet before him the ſucceſſe of their diſcord; and alſo the happineſſe that they had enjoyed by concord; and let it move them to joyne together for all their profits; and let them thinke as I thinke,

thinke, till they be better adviſed; that there is more wit in that fable, then is in an hundred of our new fabulous fancies, and ſtrong conceited whimſeyes.

And whereas the old ſaying is true, That need is the whetſtone of wit; let us be wiſer than our Predeceſſours, and whet our wits with the thought of it; and ſtudie to prevent neede before it cometh: for that the prevention of a diſeaſe is better than the cure afterwards.

And let us not make ſo great a difference betweene providence and prudence as ſome doe; and if either be preferred, let providence goe before: ſo will prudence be leſſe troubled when he cometh to doe his dutie; and leſſe repentance will ſerve, when a vice hath beene ſtayed before it be actually committed.

And let me not totally deſtroy fancie, for that it is cauſe of much good ſometimes: for Birds would not take ſo much care and paines to feede their young ones, but that every one thinketh his owne little one to be the faireſt: and I would not have ſpent ſo much money, labour, and time; but to fulfill my fancie.

For I have as ſmall reaſon to doe it as any man in *England*, having received many wrongs and injuries, by divers perſons whom I freely forgive; and deſire God Almightie to doe the like: for it was not they that did it, but that wicked root Covetouſneſſe, which got poſſeſſion of their hearts: with whom I can never be reconciled; but have vowed the ruine thereof, and cannot be ſtayed with any perſwaſion whatſoever.

And having tried divers waies to accompliſh my enterpriſe, can finde none, but to choake, ſuffocate, and make it to ſurfeit to death with the food that it moſt loveth.

And it is a ſtrange thing to ſee that I cannot rule my paſſion, but to run headlong upon it; though I ſee plainly, that pride and luxurie are like to grow in the roome of it.

And that I ſhall be juſt like to a Tinker that ſtoppeth one hole and maketh two greater; and were it not for feare

of this miſchiefe; I would declare ſomething that here ſhall be omitted.

For I would be loath to be ſo bad a Phyſitian, as to have no more care in the Compoſition of my medicine, but that the hot ingredients thereof ſhould cure an Ague, by putting the patient into a Feaver being a more dangerous diſeaſe.

Amongſt all my Obſervations in the workes of nature, I could never finde ſo exquiſite a Modell or reſemblance of a well ordered and flouriſhing Common-wealth, as is an hive of Bees; who in theſe two principall points doe ſo farre excell men, that they may well goe to Schoole to them: for firſt they are all induſtrious, and ſuffer no drones to remaine amongſt them, and by this meanes their well living is no whit diminiſhed by growing numerous: Secondly, they are all bent to worke for the generall good, which is manifeſtly ſeene by this one remarkable point: for when any one hath fortune to finde out a pot or veſſell of honey, he doth not like men eate it all up himſelfe; but forthwith he goeth home and telleth his fellowes whom he guideth to the treaſure which he hath found: and there they worke with one conſent, till they have carried it to their owne hives if they be not letted by force: I being ſchooled by this commendable example, have publiſhed this Diſcovery, which muſt needs prove ſome huge Creature, for that it hath been threeſcore and foureteene yeares betweene the conception and the birth: this treaſure conſiſteth of improvements in Husbandry; whereof the leaſt is ineſtimable and infinite, for that thereby ſo many lives preſent and future are maintained; theſe partly by a Booke given me by one of my Auncеſtors, containing all the remarkable obſervations for fiftie yeares of the weather: the plentie and ſcarcitie: the cheapneſſe and deareneſſe: with all accidentall occurrences, and the naturall cauſes of the ſame; and partly by my owne obſervations and experiments for the ſpace of 24 yeares, I have by the bleſſing of God found out, which if I ſhould conceale, and not publiſh, I conceive that I did commit as execrable a villanie, and

and as much defile my conſcience, as if I ſhould ſee a number of men in danger of drowning, and ſhould not lend them my hand to helpe them: if any one ſhall calumniate theſe improvements with the name of innovations; let him be pleaſed to remember himſelfe, that ſuch innovations as theſe have beene accuſtomed in all ancient times, as the people grew more and more numerous, to be put in practiſe: for three ſeverall times the people growing too numerous for their maintenance, God hath given underſtanding to men to improve the earth in ſuch a wonderfull manner, that it was able to maintaine double the number, and ſo he that made mouthes, ſent meat by teaching them underſtanding how to get it: for when there were but few, they were maintained by Fiſh, Fowle, Veniſon, and Fruits; freely provided by Nature: but when they grew too numerous for that food, they found out the Spade and uſed induſtry to augment their food by their indeavours: then they growing too numerous againe, were compelled to uſe the plough, the chiefeſt of all engines, and happily found out: whereby all Common-wealths have ever ſince beene maintained, and at length this invention would not ſerve the turne neither without new skill in the uſing of it: for at the firſt they uſed to till the Land till the fatneſſe thereof was ſpent, and ſo to let it lye a long time to gather fatneſſe againe of it ſelfe; and in the meane time to till freſh Land: but when they grew too numerous for the food gotten that way, they were compelled to finde out the fallowing and manuring of Land: by which invention the Land recovered more fatneſſe in one yeare, then before in many yeares; and ſo a Countrey would maintaine double the number of people more then before: now the people are growne numerous againe, requiring new improvements which are diſcovered in this little Booke, and ſhall be ſhewed by irrefragable demonſtration, and infallible experience; alſo it ſhall be made manifeſt, that by the Common courſe of Husbandry uſed at this day, the barrenneſſe doth by little and little increaſe, and the fertilitie decreaſe every yeare more and more, which in regard that the people doe increaſe

wonderfully, muſt needs at length produce an horrible miſchiefe, and cauſe the Common-wealth to be oppreſſed with povertie and beggery.

When as by theſe new inventions and improvements being induſtriouſly practiſed, their wealth ſhall not be diminiſhed, but contrary wayes wonderfully increaſed, though the people ſhall grow wonderfully numerous.

And this buſineſſe is not to be ſleightly thought upon, for ſo much as Husbandry is the very nerve and ſinew, which holdeth together all the joynts of a Monarchy.

Neither is Invention to be lightly regarded: for all workmanſhip without invention, reſolveth it ſelfe into the workmans belly, as may be manifeſtly ſeene: for before the plough was invented, and before Horſes, Oxen, and cattell were taught to doe the works which men did before, all their labour came to nothing, but onely to fill the belly; but ſince that time, by the benefit of theſe and other inventions, we ſee what Caſtles have beene built in time of Warres, and what Churches in time of Peace, what famous Townes, Cities, and Schooles, and other things conducible for the Common good: alſo, by this meanes men were ſpared from ſervile labours, that they might attaine to knowledge to be Statesmen, Clergie men, Lawyers, Phyſicians, Merchants, Tradeſmen, &c. without which no Common-wealth can ſubſiſt.

And for ſo much as the new world called America, doth for the preſent give aide and ſuccour for the maintenance of the ſurpluſage of people increaſed in thoſe Countryes; yet in regard that the finding of new worlds, is not like to be a perpetuall trade; it ſeemeth to agree with providence, to beg in to improve the Lands formerly peopled, in ſuch manner that by their induſtry there may be raiſed maintenance for double the number.

Which to performe is no hard taſke, in regard that all treaſure and riches are nothing but congealed vapours: for what is corne, and fruits, the chiefeſt of all riches, but the fatneſſe of the earth; *Iacobs* bleſſing elevated by the heate of the Sunne, and turned into vapour by the helpe of the Vniverſall

verſall ſpirit of the world, then drawne together by the Adamantine vertue of the Seeds, and Plants, and ſo congealed into the ſame forme? and what is Silke, Velvet, fine Clothes, &c. but the vapours of Animalls congealed in the ſuperficies of their bodies, where the Animall heate was able to elevate them no further? and if any man will hazard a wager upon it, I will undertake to ſhew by irrefragable demonſtration & experience, the great Teſt and onely triall whereby truth is diſtinguiſhed from impoſture; That Gold that great Commander, is nothing elſe but the ſaid fatneſſe of the earth, elevated by the ſaid univerſall ſpirit, and after depuration congealed into that ſplendorous Body.

Yet I would be loath that this ſhould animate men to ſpend their goods this way as many have done; Therefore I will them to underſtand, that though I affirme the Art of Gold making to be true, yet I doe not affirme it to be lucrous in theſe times.

For the difference oft-times may make a gainfull art to be not gainefull: for when an Earledome, or Province was morgaged for a thouſand Markes, as we finde in credible Hiſtories they were; then gold making might be a profitable Science, and yet nothing worth in theſe times, when as one Farme will buy a thouſand Markes.

By this meanes, the wiſe and godly men which have written of this Art, are cleared of aſperſions, and impoſtures; for that they were no Prophets to foretell theſe mutations of times.

Now ſeeing that all treaſures are nothing but congealed vapours, there reſteth nothing to be done for the performing of my undertaking, but to ſhew the Art of doing the worke, and then the treaſure is diſcovered according to the Frontiſpiece of this booke: which worke is plainely made manifeſt in theſe enſuing lines. And whereas all men are invited to be ſharers, it concerneth me to ſhew how they ſhall receive benefit thereby; which thus I make good.

Though the Husbandman carry away the greateſt ſhare, as they are moſt worthy; yet part cometh to the poore worke-

workemen for their imployments; and part to the Clergie by the improvements of their Tithes; and part to the Gentrie by the improvement of their Lands and Rents; and the King hath no cauſe to doubt his part to come ſhort: for if the ſubjects ſhall be rich, they will be ready, both with purſe and perſon, to defend and offend upon all occaſions: even as a man having good ſtore of treaſure, being aſſaulted by theeves, will fight more valiantly then he that hath nothing to loſe: and then they will not pay their money with ſuch grudging as now they doe; for that a little preſerveth a great deale: and as for the Kings honour, it will be then as much more excellent then now, by reaſon of the heartie affection of the honourer; as a piece of true gold differeth from a counterfeit piece.

Alſo the Tradeſmen whom it leaſt concerneth, ſhall be ſharers too; for when there is ſuch ſtore of good imployments in the Countrey; the Cities will not be ſo overcharged with multitude of Tradeſmen; and more then that, they will have greater dealings, and better imployment.

Alſo the impotent poore; as old, lame, blind; alſo fatherleſſe, ſtrangers, widowes, priſoners, and ſuccourleſſe people will have ſhare: for then their number will be but very few, in compariſon of what is now: alſo charitie will increaſe together with abilitie.

I dare undertake to ſhew a way how the working poore may be imployed in theſe new improvements, in ſuch manner that they may live twice aſwell as they doe now; and yet notwithſtanding, there may iſſue out of the benefit of their labours, ſufficient maintenance for the impotent poore, and all others above mentioned.

Which worke will be almoſt as chatibable and good, as if I ſhould build an Almes houſe in every Pariſh, and give perpetuall maintenance to the ſame.

And of all ſharers mine owne part will be the leaſt, for I am like to be a loſer by the bargaine in my wealth; onely I ſhall die with a more quiet conſcience, which is better then wealth: for my knowledge how to get wealth, will be con-

founded

founded by this new alteration; for by my long and diligent obſervations in theſe affaires, I am growne able to diſcerne and foreſee the ſcarcitie, and unavoidable deareneſſe of many things before every vulgar perſon; by which meanes I could eaſily raiſe to my ſelfe, and to my poſteritie, more wealth then can any way accrue to me by the publiſhing of theſe my Inventions and Improvements, which will cauſe ſuch a mutation, that all my former obſervations will ſtand me in little ſtead for ſuch a purpoſe; yet that all ſucceeding Ages ſhall know, that once a man did change ſo great wealth for a quiet conſcience; I will proceed to the uttermoſt of my skill, to make all my knowledge to be every mans, and to forgoe my owne gaine, for the benefit of many.

And though here will be little found in this Booke, but what every underſtanding man knoweth to be true; yet I hope I ſhall performe ſundry good offices: for to ſome I ſhall be but a remembrancer of what they knevv before, but forgot to practiſe it: to ſome I ſhall be as a Midwife, who though ſhe neither conceiveth, nor beareth the child; yet performeth a good office in facilitating the birth of it: to ſome I ſhall help to bring to ripeneſſe certaine ſeeds of knowledge, planted in their hearts by the Finger of God in their creation.

And as for my owne Inventions and experiments, I would be loath, that having pretended to give men ſo much wealth and treaſure, I ſhould bring any man into loſſe and damage of that which he had before. Therefore in regard that no certaine rule can be given for ſo variable a worke; I wiſh that every man may trie the truth in a fevv Perches of Land; and when he hath found out his fit ſeed, his fit compoſition of manure, his fit depth of planting and ſetting, and hath diſcovered all inconveniences, and knoweth how to avoid them; then to goe to worke in greater quantities.

For we ſee that though all riches are nothing but congealed vapours, yet the aire in *Spaine* and hot Countries, is apt to

be congealed into ſome manner of riches, and the aire in theſe Northern Countries is apt to be congealed into other manner of riches: alſo the vapours ariſing out of Clay ground are apt for ſome things, and the vapours of ſandie ground are apt for other things, and all ground is fit for ſome uſe or other: for God and Nature made nothing in vaine, and therefore the ſaying being found true, *non omnis fert omnia tellus*, it is not ſo ridiculous a thing as the world doth repute it, for men ſometimes to try concluſions: for if people did not increaſe; I confeſſe that then the old waies were beſt and ſureſt: but in regard that new numbers grow daily, therefore it behooveth us to have new inventions and improvements, whereby they may live by their induſtry and not by ſhifts and unjuſt devices as now they are forced to uſe.

For though the new Plantations were happily found, and have disburdened theſe Countries of the extreame ſurpluſage of people; yet we ſee by experience, that they are as it were ſqueeſed out by force of povertie and want, and moſt of them try all their ſhifts before their departure, which cauſeth ſuch ſtore of ſhifts to be put in practiſe as are now uſed, wheras by honeſt induſtry they might helpe themſelves, being ſet in a good way, with as much leſſe trouble to their minds, as their induſtry would bring trouble to their bodies.

And one of the principall Motives which mooved me to put out this Booke, was a griefe of minde to ſee ſome indifferent well diſpoſed perſons, to lye and ſhift even as a thiefe that ſtealeth a Sheepe for very hunger: with whom I have conferred about it, and found that they could get no convenient imployment, at leaſt anſwerable to their nature and education.

Wherefore my ſtudie hath beene to finde out inventions of ſeverall natures; whereof ſome of them conſiſt of skill, as much as upon bodily labour; whereby men and women of good birth may without diſgrace acquire their livings.

Now, for ſo much as it is plaine that need cauſeth ſhifts, and alſo it is as plaine, that the ſaying is true in Philoſophy,

ſublata

ſublata cauſa tollitur effectus: I will ſumme up my Booke into one groſſe ſumme and conclude; that if I take away need, the ſhifts will be gone.

Wherein I will put my ſelfe upon the great Teſt, viz. experience, whereupon my droſſe will be burned away, and nothing but Gold will remaine; for that Teſt ſuffereth no impoſture.

And I make no queſtion, but there will be found ſome droſſe, yet if the greater part prove to be Gold, my requeſt is, that all Readers will play the Refiners, and if they finde more Gold then droſſe, then I am Gold Oare at the leaſt, which is Mine Royall, though not ſo pure Gold as I deſire to be.

And ſo I end my preamble, thinking the time as long as the Readers till I be at worke, and ſhew my skill in performing my undertaking in forme following.

And my firſt worke ſhall be to divide my Booke into twelve Chapters, for the eaſe of the Readers mindes, in regard that their bodies are to be imployed in the enterpriſe more then their mindes, following the example of former inventors, who diſcharged that part: for *Solomon*, and all other Wiſemen never bore their diſciples in hand with miracles, but evermore ſtirred them up to induſtry, ſhewing that it was accuſtomed that God Almightie did performe his providence uſually by teaching men underſtanding to acquire their livings by induſtry, and ſeldome rained Manna, or fed them miraculouſly.

CHAP. I.

Wherein is manifeſtly ſhewed the nature of the ſubject which we are to worke upon, viz. *the terreſtriall Globe conſiſting of earth and water: the ſituation of it, and the ſecond cauſes of its ſtabilitie.*

THE Terreſtriall Globe compoſed of Earth & Water, being the Subject which we are to worke upon, is nothing elſe but the groſſeneſſe and reſidence of the Elements, the wombe of all ſeeds and plants, which we aré to make uſe of in our new husbandry, wonderfully placed in the middle of the vaſte Element of Aire, not by the power onely of the mightie Creator: but alſo by his wiſdome and exquiſite artifice: for the Magneticke vertue betwixt it and the celeſtiall Orbes, is ſo exquiſitely proportioned, in number, weight, and meaſure; that no ſide is over-matched with vertue attractive or expulſive; therefore it abideth in the middle of the univerſe, with as great ſtability,

as if it had a ſupporter, ſuch a one as our underſtanding is capable of: if men could obſerve proportion, they might frame a kinde of module thereof, by hanging a bullet of iron covered with clay, in the middle of a Speare, beſet about with Loadſtones of equall vertue attractive: but I conceive time may be better ſpent, in admiring the wonderfull power, wiſdome, and exquiſite artifice of the mightie Creator, and alſo in letting this glorious Fabricke of the univerſe be to us all, the univerſall Preacher of Divinitie, to teach us to adore and love the Creator thereof: in which divine worſhip, I could deſire that there might be a new invention or improvement in two reſpects: Firſt, as the common way uſed is, to bow the knee of the body; ſo the new way ſhould be to bow the knee of the heart: and as the common way now uſed is, to be every one for himſelfe, ſo the new way ſhould be, to be for the generall good of every one: if the laſt of theſe be not performed, the firſt cannot: for it is unpoſſible that he can honour and love God aright, which doth not love all his brethren whom God hath created upon the face of the earth; and if he love them, he will worke for the generall good of them all, which if he doe not, then his love is fained, and his Religion is vanitie.

And had I eloquence or learning, I would preſſe this point with all my force: for that all the inventions and improvements in this booke, are not to be compared to this one for excellencie; neither is there any great hope that the reſt will ſucceed well, if this doe not precede: for ſuppoſe that men for meere lucre ſhould be induſtrious in this new huſbandry;

bandry, yet if they omit theſe two firſt new inventions, they may well feare the ſucceſſe; for that they have left the prime Workman out of the field, to wit, God Almightie, without whoſe bleſſing all is vanitie and loſt labour: whereas on the other ſide, if they ſhall firſt learne theſe two new inventions in the ſervice of God and love to men, (by which, and by no other way then by working for the generall good, the ſinceritie thereof can poſſibly be diſcerned) then will they all with one conſent worke cheerefully in this new husbandry, and the chiefeſt happineſſe of all will be; that then God Almightie will bleſſe their labours, by ſending the former and the latter raine in due ſeaſon, whereby their harveſt ſhall be doubled in quantity: for moderate raine fatneth the earth, but too much or too little cauſeth barrenneſſe; as may be ſeene by this laſt yeares ſucceſſe where the want of a little raine preſently after the Spring ſeed time, hindred this kingdome above the value of an hundred Subſidies, and alſo one flood comming by immoderate raine, did as all floods uſually doe, viz. carry in the belly of the water into the Sea, as much fatneſſe as would produce here in England the value of one hundred Subſidies more.

By which paſſages, we may ſee how little it is to purpoſe to ſtrive againſt the ſtreame, viz. to thinke by our owne induſtry alone, without the heavenly benediction, to proſper in our labours.

Therefore let us, having the pith and ſubſtance of Religion, practiſe the ſame ſincerely, and ſo addreſſe our ſelves to our worke, leaving the particular differences in Religion, to the diſputations and determi-

determinations of Schooles, and in ſo doing both we and the Schooles ſhall fare the better for it.

And for the more powerfull cheering up of all men to theſe two duties, let us conſider well of the wonderfull power of God accompanied with his admirable wiſdome and exquiſite Artificein the eſtabliſhing of the Sea in his place, which is not by vertue of the Sea banks as it is in freſh rivers, as vulgar people doe imagine, though the Sea banks doe ſomewhat reſtraine the great libertie that the Sea would have: yet is the ſea heaped up into a ſpherical forme round like a Ball, by the attractive and expulſive vertues of both the celeſtiall orbes, and the terreſtriall orbe, wherein the one vertue doth not over-match the other at all, ſave onely that the Moon chief governeſſe thereof, doth a little overſway the reſt cooperating with her, but withall giving her the predominancy; whereby ſhe cauſeth the tides to ebbe and flow as we ſee: which worke though it ſeeme great in the narrow Seas, yet in the maine Ocean, it is ſcarſe perceptible, but even as it were the rowling of a Bullet, ſo very little, that the ſpectators perceive it not to be rowled at all.

Which heaping up of the Sea is manifeſtly ſeene by this demonſtration: let a Ship goe out from the Shore, and about ten miles diſtance the ſpherical forme of the Sea will hide from your ſight, ſtanding on the Shore all the while, about fiftie foot of her, and alſo he that in the Ship taketh notice of this thing, will finde that as he departeth from the Shore, ſo if he will be ſtill deſirous to ſee the Shore, he will be forced to climbe up the Maſt higher and higher, as the Ship goeth further from the Shore,

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untill at length he cannot ſee the Land at all, by reaſon of the ſphericall Compaſſe of the water, though he climbe up to the top of the Maſt.

Whereby it appeareth plainly, that the Sea acquireth his deepneſſe, as well by this heaping of it ſelfe together above the earth, as by concaving it ſelfe in the earth.

For if a ſtreight line ſhould be drawne from the Sea banks at Mexico to the Sea banks in the Eaſterne coaſts, and the meaſure of the depth of the water in the middle of the Ocean to that line, ſhould likewiſe be taken, it would be found that if the Guider and Preſerver of this Univerſe ſhould be remiſſe never ſo little, and ſuffer the water to ſinke flat like the freſh rivers, we ſhould be all drowned in an inſtant.

Which wonder produceth to me another wonder almoſt as great, which is, that rationall men ſhould be ſo ſtupid as not to ſtand in awe of God the mightie Creator, who with one frowne is able to deſtroy them all ſo eaſily, or ſhould goe about to diſſemble ſo with him (who knoweth all things) with their complementall ſervice and honour to him, for either they muſt needs goe about to coſen him, or elſe they muſt according to his will love all creatures which he hath created, which love muſt needs be fained, unleſſe it be manifeſted by working for the generall good of them all, and not onely of all that are created, but of thoſe which ſhall come afterwards.

And if any ſhall be found remiſſe or refractory in wiſhing well to theſe proceedings, appearing ſo evidently to be for the generall good of all the inha-

bitants upon this terreſtriall Globe, or ſhall uſe any indirect meanes by depopulating townes or dwelling houſes, or by unjuſt making warres whereby the people ſhall be decreaſed: it being ſo manifeſtly ſhewed, that there is no ſuch need, but that there is ſufficient maintenance to be had for them, though they ſhall increaſe and grow never ſo numerous: Theſe men of which ſort I have heard of, now hitherto doe demonſtrate to God and the world their ignoble nature, and their beaſtiall ſwiniſh and viperous diſpoſitions.

CHAP. II.

Wherein is plainely ſhewed how workemen may be provided for the accompliſhing of the enterpriſe.

AS for workmen for this buſineſſe, I make no queſtion but that all working poore will be ready upon the firſt ſummons to come to worke, if ſo be they may receive maintenance for the ſame, which now they want extreamely; which I would adviſe all Landlords to disburſe, in regard that they ſhall receive an improvement in their rents, of farre more value then the money diſburſed would yeeld by purchaſe of new lands; yet in regard that theſe are not ſufficient, I could wiſh that many others might be imployed which might beſt be ſpared in the common-wealth; of which

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ſort are liars, ſhifters, and deceivers of others, and which doe now eat the bread of other mens labours by their ſubtilties; but in regard we are to make uſe of their bodies for labour, therefore their conqueſt is fit to be accompliſhed by ſtratagem, which is a difficult worke to deceive the deceiver: I have ſtudied much to finde out an Invention how to effect this enterpriſe, and finde, that as receivers make theeves; ſo temerarious beleevers make liars: and to redreſſe this miſchiefe, I have ſometimes thought it the beſt way to beleeve no man: whereupon, this inavoidable inconvenience followed; that many times we ſhould reject the truth as well as lies and deceit: for I finde that truth ſpoken plainly, doth echo in the minde of the hearers, ſaying the ſame things over againe: but this is the miſchiefe, that ſo few hearers have underſtanding to judge which is true, and which is falſe: for where the hearers want abilitie to judge, there lies and deceit make the ſame echo, which truth doth in the former: ſo while theſe perſons can finde any ſhallow brain'd beleevers, there is ſmall hope that we ſhall winne them to be labourers in our new husbandrie: therefore amongſt all ſtratagems to winne the field of them, I finde none like unto my firſt invention contained in the firſt Chapter, viz. to bow the knee of the heart in the roome of the uſuall bowing of the knee of the body: and withall, to be humble petitioners to the donor of wiſedome, and underſtanding, to ſend the light of truth, and the knowledge of truth into the world plentifully: then doe theſe

perſons become ſuitors to be admitted to be workmen in our new husbandrie, being defeated in their former trades: ſo ſhall we have workmen enough to accompliſh our enterpriſe for the preſent time; and as for the future, there will be ſuch an exquiſite proceeding, that it will be as difficult a thing to diſcerne whether the people increaſing cauſe the fertilitie to increaſe; or whether the fertilitie increaſing cauſe the people to increaſe; as it is for a Philoſopher to finde out by argumentation whether the egge or the bird was firſt. For the numerous increaſe of people diminiſheth not their maintenance ſo long as they are all induſtrious, no more then twenty hives of Bees are impoveriſhed more then if there were but one in the ſame garden, ſo long as they are all induſtrious, and ſuffer no drones to live among them.

But becauſe that in the meane time ſome ſhall reap benefit by avoiding theſe deceivers; I wil ſhew a politicall invention how to finde out their knaverie, which is thus made manifeſt: even as he that hath good gold to ſell, will goe to the moſt expert Goldſmithsr, efiners, or ſay Maſters, and will by that meanes get the beſt price: but contrariwiſe, he that hath counterfeit mettall will go to thoſe which are more ignorant (fearing the greatteſt) and there make their markets: even ſo he that hath a good project, and truth on his ſide, will goe with it to the moſt able men of judgement; wherers the deceivers will goe to thoſe of the weakeſt judgement, thereby winning facilitie to deceive: therefore the ſafeſt way is for every

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man to doubt his owne judgement; and not to be too raſh in giving credence, till the greatteſt experience, hath determined the doubt.

CHAP. III.

Wherein it manifeſtly ſhewed, how tooles and inſtruments may be provided the moſt commodious way for the worke.

AS for Tooles and Inſtruments, though they be made of two materials chiefely, to wit, wood, and iron; yet is wood the chiefe thing to be provided for, in regard that without it, no iron can be provided; for I finde by experience, that all attempts to make iron with Seacoale or other coakes, are vanitie: for though it may be melted that way, yet the good metallicall qualitie of the iron is deſtroyed, or at leaſt the greateſt part of it; for I finde by experience an Arſenicall or Antimoniall qualitie in all ſubterraneall ſubſtances combuſtible, both which are poiſons to iron.

Now the multitude of Timber brought yearely from *Norway*, and other parts, doe plainly demonſtrate the ſcarcitie thereof here: alſo it may be conjectured what a miſerable caſe the Kingdome will be plunged into about an Age or two hence, for want of Timber.

There is a Law in *Spaine*, that he that cutteth downe a tree, ſhall plant three young ones for it; and by this meanes there are builded in two Provinces, both not ſo great as Yorkeſhire, twentie Ships yearely, and yet the wood increaſeth: If this Law were obſerved here, how happie would it be for the poſteritie? the charge is little, there is nothing wanting but one of my firſt inventions; to wit, love manifeſted, by working for the generall good; not onely of all that are now alive; but alſo of thoſe that ſhall come after. And I ſee no reaſon why Landlords ſhould not contract with their tenants, to put this worke in practiſe diligently; for then their rents will be more and more improved every yeare: and if this be omitted, their rents will be diminiſhed in future time.

Now, for the improvement of this worke; I would have all Timber trees planted in hedgerowes, and by this means no ground will be loſt: but all woods and thornie grounds may be turned into fruitfull fields and paſtures, and are apt to be made fertile by my new inventions: beſides, the planting of the Timber trees in hedgerowes, bringeth a double commoditie; for they are not onely an helpe to divide the land of induſtrious perſons, from the land of the idle, that every one may enjoy the fruit of his owne labours; but alſo they will be notable ſhelter for the Cattle in Winter, to preſerve them from cold ſtormes; and no leſſe commodious, to keepe them from the heate of Summer.

And if any one ſhall object againſt the multitude of

of ground loſt by hedgerowes; let him remember himſelfe, that every hedge gaineth ten times his proportion of land; for that the Cattle in hot weather are thereby ſhrouded; which elſe would deſtroy more with their feet, then they eat with their mouthes, by their gadding, and running up and downe, whereby that every Beaſt eateth with five mouthes: alſo they loſe more fatneſſe in one hot day, then they gaine in three coole dayes; which is a thing to be conſidered upon.

And I dare undertake to extract more riches by ten times unto the ground where any tree groweth out of an hedgerow, then it will be worth when it cometh to be a tree fit for uſe; therefore I adviſe all men, to kill many Birds with one boult; for in the hedgerowes a tree ſpreadeth, fenceth, ſhelter-eth, ſhadoweth, and increaſeth in magnitude altogether.

And there is no queſtion, but the Tenants will be better able to live, and pay their rents, when they have neither houſeboote, ploughboote, nor fireboote to buy; according to the old phraſe in ancient Evidences; but have all in their owne grounds, as they had in ancient time, before this improvident husbandry was uſed: for now Huſbandmen are turned prodigals, waſting all in their owne time, without care or providence for their poſteritie.

And as in Cities, their rents are improved onely by the multitude of chambers, and roomes in the Houſes to be let; becauſe that there the rents

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are onely given, for the conveniencie of habitation: ſo in the Countrey, on the contrary, the habitation being leaſt regarded, the rents are raiſed out of the improvements of the land; which if it be well ſtored with timber trees, and fruit trees, bringeth no little benefit to both Landlord and Tenant.

Therefore ſeeing that if Timber trees ſhould be planted thick in forme of a Wood; there would be more loſſe in the land before the trees come to perfection, then the trees would be worth; conſidering the length of time, and alſo how the land might be improved in the meane time: therefore I would have all trees planted in hedgerowes, for the reaſons heretofore mentioned.

Alſo, I have knowne an Orchard of ten Acres of ground, which might have beene ſo improved otherwayes, that it would have mainteined a familie of ten perſons; if all the trees had beene tranſplanted into the hedgerowes, according to the practice uſed in Worceſter, and Herefordſhires, and in divers places beyond the Seas. And if this practiſe was once generally uſed, there would be no more danger of ſtealing, then there is of wheat, or of grapes, or of theſe fruits where this practiſe is generall through the Countrey.

Now for this purpoſe, it behooveth every Farmer to have a little Nurcery, where to ſow, or ſet Acornes, Aſh-keyes, Hawes, Plumbe-ſtones, Chery-ſtones, kernels of Apples, Peares, and all manner of fruits fit for his Climate. And for new Invention let him chooſe the beſt fruits; For Nature

ture ſuffereth her Elements to be congealed into good frnits, as gladly as into bad.

Alſo, when he ſetteth his ſmall trees, at the firſt, let him ramme downe the earth ſad below, and lighter towards the ſuperficies; that ſo the rootes may have a better fabrick, and may ſpread, through all the points of the Compaſſe, or the more of them the better, though not all; and may not point downewards, towards the barren earth, but ſpread in the rich mould, the better to draw nutriment.

And when any man would plant twentie fruite trees, let him ſet fourtie kernels; and when he ſeeth how they prove, he may chooſe the kindely ones, and throw away the other; and not cumber the grounds with them.

And let him chooſe neither thoſe that have very long joynts, nor thoſe that have very ſhort ones, but the middle ſort; for the long joynted plants are apt to ſpend themſelves into leaves, and branches; and the ſhort joynted ones will be but dwarfe-trees.

And let him chooſe his grafts preciſely; for he ſhall be ſure to finde the Proverbe true in this worke, viz. Such a Mother, ſuch a daughter.

Whereas divers attempts have beene made for the preſerving of fruits form falling in the Spring time, and have not taken that good effect which was hoped for; I will declare my experience therein, by laying open the cauſe thereof more plainely, then ever I could finde written in

any booke, or diſcourſed of by any man in all my travels.

And firſt, I finde the cauſe thereof to be double; the one by froſts in *May*, the other by reaſon that the Trees are repleat with a more flegmaticke, and wateriſh juice then is convenient.

To redreſſe the firſt, let there be made an earthen pot, like a little Still, to be hanged with a coard in every tree, in froſty nights; halfe a pecke of ſmall coales, which will coſt but an halfe-peny, will give an aire all night, if the pot be covered with a tile, and ſome wet hay be laid upon it.

And ſome yeares, two or three nights will be ſufficient; ſome yeares there will need none at all: the way to know when it will freeze, may be found by the weather-glaſſe, deſcribed in the Chapter of the Sheepe.

To redreſſe the other inconvenience, I muſt diſcourſe a little more largely of the cauſe; firſt it is found by experience, that thoſe Trees which were barren the former yeare, doe not ſo eaſily let their fruits fall with froſts, as the other; the reaſon is, becauſe thoſe Trees got a more ſolid juice by their barrenneſſe; for the Sunnes heate, in the former yeare, exhaled and drove out the more flegmaticke juice, and ſo left the trees better furniſhed with more firme nutriment for the next yeare; that being the principall component in all things naturall; and being wanting, no fruit proſpereth: for as is declared in divers places of the booke; all fruits are compounded of a double ſubſtance,

ſtance, the one terreſtriall, and the other aethereall, and for the moſt part, the want of the terreſtriall part cauſeth ill ſucceſſe.

Now to helpe this evill, it is found by experience, that when a Tree hath beene blowne downe with the winde, and hath beene lifted up againe, and covered with new earth; that Tree hath beene more fruitfull by much, then ever it was before; the reaſon is, that while it ſtood firme without altering the earth, it had ſucked all the ſolid juyce which lay within its reach, and could get no more.

Therefore it is very good ſometimes to change the earth about the principall rootes; and if any rootes grow right downward into the barren earth, then to cut them off.

So ſhall you have fruites in ſcarce yeares, when others have none; in ſuch a yeare, one buſhell of fruites is worth a great number in other yeares, when Nature is ſo friendly, as to proſper them every where; whether induſtry be uſed or not.

CHAP. IIII.

Wherein is ſhewed how food, and maintenance for the workmen may be provided, by the induſtry of the ſaid workmen.

AS for maintenance for the workmen, I ſee no reaſon why the Landlords ſhould be remiſſe in providing the ſame; in regard that the money laid out upon the improoving of their own lands, will yeeld a farre greater annuall revenew, then twice ſo much money laid out in the purchaſing of new lands. And I ſee no reaſon why Tenants at will, Tenants for terme of life, or for a ſhort tearme of yeares, ſhould be induſtrious, when as the benefit of their labours, is to fall into other mens purſes; unleſſe there be a Contract betweene the Landlord and Tenant; whereby a juſt ſhare may redound to both parties anſwerable to their merit: which if this were done, then would the Husbandmen be much ſtirred up to trie experiments; and if they ſhould but ſpend their ſpare times in theſe workes, there is no queſtion, but that many fat veines of marle, chalke, limeſtone, and other earth, would be diſcovered in many places which now lie hidden, and doe no good at all.

Alſo, the Common wealth would be furniſhed with Timber trees in ſuch manner, that the wealth thereof

thereof would not be ſo exhaufted as it is; and is more like to be in future time, by importation of Timber from other Countries.

Alſo, it would be furniſhed with fruit trees, which is a wonderfull commoditie, in time of dearth and ſcarcitie; for before this laſt yeare, it hath never happened that Corne and Fruits have both failed in one yeare; but even when Corne was ſcarce and deare, then fruits were plentifull, which produced Perry and Cider in great plentie; ſo that the Countrey received great reliefe, not onely for their drinke, but alſo for their food: and this I can witneſſe for the ſpace of threeſcore and fourteene yeares, partly by mine owne experiences and partly by my book of fiftie yeares obſervations.

CHAP. V.

Wherein is ſhewed that the common way in Husbandrie at this time uſed, will produce in length of time, nothing but povertie, and beggerie.

AS for the Common way and practiſe in Husbandrie uſed at this day, all men of good underſtanding doe know, that it produceth every yeare barrenneſſe more and more; and in the end, will produce nothing but povertie and beggerie: but

whether the ſame may be redreſſed by new Inventions and Improvements, is a thing much doubted; and indeed, the queſtion cannot be determined by any other way, then by experience, which admitteth no impoſture: for every Husbandman knoweth, that ſheepe being fed upon the Commons, and carried with their full bellies into the Folds upon the arable land, doe impoveriſh the one ground, to fatten the other; whereby it commeth to paſſe, that one Acre of land incloſed, is better then foure Acres of the ſame in Common: whereby it is plaine, that three parts of foure, of all Commons are utterly loſt: alſo the deſtruction of Timber, and the neglect of the increaſe thereof; alſo the neglect of ſeverall other workes plainely declared in this booke.

Alſo, they know that the Land flouds doe carry away the fatneſſe from the arable land, and all high grounds, in huge quantitie into the Sea, which is further manifeſted, by the leaving of ſome ſmall part thereof in the meadowes, whereby they are inriched: alſo the further manifeſtation of this truth is ſeene by *Nilus* in *Egypt*, the Granarie of the World: where they have no more fertilitie then the water bringeth yearely in his belly in certaine moneths, during its overflowing of the ground; in whoſe reſidence left behinde, they uſe to ſow their ſeed, and have incredible increaſe; and the greater the overflowing is, the greater is their plentie; which they can diſcerne by certaine pillars marked with ſeverall marks, which the height of the water touching higher or lower, doth demonſtrate

ſtrate afore-hand the quantitie of the enſuing plentie.

Which reſidence of the water, if it had hapned in a Countrey where it had not beene taken notice of, nor the nutrimentall vertue thereof bin extracted yearely by ſowing of Corne, or other things; there is no queſtion but that it would have become a fat veine of marle, able to have fertilized other land: for I could never apprehend any other reaſon of the veines of marle, but that the water left that fat muſſilage in former times: whoſe fatneſſe hath not bin exhauſted ſince by any induſtrie; and the ſame reaſon, I conceive, is the cauſe, why limeſtone and chalke doth fatten ground; onely here is the difference, that the limeſtone and chalke are covered with more common earth, and are placed ſo, that the ſubterraneall vapours doe more impregnate them, and indurate them into an hard maſſe; ſo that they doe ſtand in need of fire to unloſe their firme compaction, whereby they may yeeld their nutrimentall vertue: and where any of theſe ſubſtances ſhall be diſcovered, there they are to be accounted as hidden Treaſure found, for that they are farre more worth then a-any Gold or Silver mine; being not onely infinite; and not to be exhauſted by time: but alſo the profit thereof not to be diminiſhed through the multitude of Sharers; which inconvenience all other Treaſures are ſubject unto; which is the reaſon that Husbandry is holden the moſt honeſt and conſcionable life in the world, and the ſupporter of all the reſt; which being compared with it, are nothing

nothing but toyes and trifles; neither conſiderable almoſt at all, in reſpect of Husbandry which ſupporteth the World; whereby it appeareth, that any new Invention or Improvement in Husbandry is ineſtimable; for that ſo many lives are thereby ſuſteined.

CHAP. VI.

Wherein is ſhewed that the new inventions and improvements contained in this Booke, will produce maintenance for all, though they ſhall grow never ſo numerous; whereby the Frontiſpice of this Booke is cleared from impoſture, in that it proclaimeth the treaſure to be infinite.

AS for the remedy for the avoiding of the encreaſe of barrenneſſe, and decreaſe of fertilitie, cauſed by the accuſtomed manner of Husbandry now uſed; the whole tenour of this Book doth manifeſtly ſhew: as by theſe particulars here under written doth more plainely appeare, wherein I ſubmit my ſelf to the Readers judgement, not onely for the annuall profit which will accrue to the Common-wealth: when the ſaid new inventions and improvemens ſhall be brought to full per-

perfection; but alſo in the meane time for the ſetting of poore people to worke in the moſt apt places, to receive the benefit of theſe new inventions; for I know a thouſand places in *England*, where an hundred pounds laid out, will bring in an hundred pounds *per annum*, with convenient induſtry perpetually to the worlds end.

In ſuch places as theſe I would have my new inventions and improvements put in practiſe at the firſt, and afterward according to the old ſaying, Let him that commeth laſt, fetch his water the furtheſt.

The annuall profit of the timber trees after one age, will amount to

The annuall profit of the fruit trees after halfe an age, will be

The annuall profit of the wooddy and thornie grounds, being turned into fruitfull fields and paſtures, will be

The annuall profit of the new meadow ground, cauſed by the watering and fatting thereof by the Perſian wheeles, will be

The annuall profit of the Moſsie and Anthilly grounds, being made double of value by theſe new improvements will be

The annuall profit of the third part of all the arable ground in England, *which may be turned into paſture, and hey ground, in regard that the two third parts are ſufficient to produce as much corne as all doe now, will be*

The Annuall profits of the Commons enclo-
ſed, in regard that every acre then will be
as good as foure acres are now, will be worth

The Annuall profit of the Seed ſaved in
ſetting, more then is ſpent in ſowing, being
nine parts in ten, will be worth

The Annuall profit of the more increaſe
upon every acre by ſetting then by ſowing
the Common way, will be worth

The Annuall profit of the Orchards being
improved after that the trees ſhall be tranſ-
planted into the hedgerowes will be worth

The Annuall profit of the Seed corne ſteep-
ed in fat water and candied with Lime, and
ſo ſet or ſowne in grounds ſo remote from the
Farmers houſes, that it will not quite the coſt
to carry manure ſo farre will be worth

The Annuall profits of the uncertain
grounds, and ſuch as through their evill tem-
perament doe often faile being brought to cer-
taintie, and made not ſubject to faile by mix-
ing them one with another, will be worth

The profit of the corne preſerved from
blaſting and milldewe, and of the Sheep pre-
ſerved from rotting, will be once in ſeven
yeares worth

CHAP.

CHAP. VII.

Wherein is declared the manner how to make barren land fertile, and that as the people increaſe, ſo by their induſtry their food may increaſe, even as twenty Hives of Bees being all induſtrious do live as well, as if there were but one in the ſame garden.

AS for the making of barren Land fertile, I finde that it may be done by as many ſeverall wayes, as medicines are made for the diſeaſes of men and beaſts, and that the worke requireth as great judgement: for ſometimes the ground is over fat, and will beare nothing, as we may ſee in many places, where it is ſo fat that it will burne, and there the cure is to cut up a part thereof into turfes, and when they are dried to ſet them on fire, and ſo to ſtrow the aſhes amongſt the reſt, to bring it to a temperament.

For I finde a double fatneſſe in every compounded Body, the one combuſtible, the other incombuſtible: the combuſtible fatneſſe cauſeth vegetation by its rarifying and vaporing qualitie, when it feeleth the heate of the Sunne; the incombuſtible or fixed fatneſſe cauſeth to agulation

of the ſaid vapours by heate of the Sunne likewiſe by its adſtringent qualitie, and of theſe two fatneſſes, are all riches and treaſures engendred.

The propertie of the incombuſtible fatneſſe is to ſinke in water, and the propertie of the other is to ſwim upon the Water, and that ground which aboundeth with the combuſtible fatneſſe is apt for ſuch Seeds and Plants as require a combuſtible fatneſſe.

And as every compounded Body aboundeth more or leſſe with either of theſe fatneſſes; ſo it ſinketh or ſwimmeth in water the more eagerly: whereby one generall opinion is manifeſtly found falſe by experience, which is, that the lightneſſe of a thing cauſeth it to ſwim, and the heavineſſe cauſeth it to ſinke.

And thus I demonſtrate it: if you caſt the body of a Nut tree which is combuſtible into the water, it will ſwim: but if yon caſt in the ſhells of the Nuts, which are lighter quantitie for quantitie, and leſſe combuſtible, they will ſinke.

And for a more full Demonſtration of this poſition take this experiment following: gold is the moſt incombuſtible ſubſtance in the world, and therefore ſinketh moſt eagerly: which may thus quickly be tried; let a twentie ſhillings piece of gold be weighed againſt his Braſſe weight, then let the ſcales ſinke an inch or two into a Baſon of water, and you ſhall finde the Gold heavier in the water by about ten graines: becauſe that the combuſtible fatneſſe in the Braſſe inclineth more to ſwimming then the Gold, that conteineth almoſt

none

none of that kinde of fatneſſe: by this experiment the truth of my poſition is proved: beſides, that any man may by this knowledge diſcover a counterfeit peece of Gold almoſt aſwell as a Refiner, if he doe it exquiſitely: for if two peeces of Gold both of one weight, the one true, the other falſe, be thus let ſinke into the water, the one will overweigh the other, and the baſneſſe may be diſcerned by the number of graines differing, without refining it, or defacing it at all: Alſo hereby Alchymiſts may learne, if needs they will be medling, to lay aſide their Balderdaſh compoſitions and illiterate operations in things not congruent, but much diſcordant for their purpoſe.

But I could wiſh they would totally leave off the practiſe for their owne good, unleſſe it be ſuch as doe it for their pleaſure, for they that ayme onely at profit run a very deſperate hazard.

For not one in a thouſand of the ſeekers finde that they ſeeke: beſides that I doe more then three quarters know that the Art is not ſo lucrous as they doe imagine.

For I know that the Art is true: alſo I know no infirmitie by my ſelfe, why I ſhould not improve it to be lucrous aſwell as an other, if it were ſo feaſible a worke to be done as is imagined.

Beſides, that the late Writers leaving ſo many Papers behinde them, ſheweth plainly, that they had a deſire to leave a fame behinde them of their knowledge: but if the Art had been ſo lucrous as ſome imagine. I ſuppoſe that they would have left ſome memorable acts behinde them which

would have confirmed the truth of their Papers.

This digreſſion I have made from my matter, to get ſome inventive braines to ſpend their ſtudie and labour with me in my new Husbandry, and doe verily aſſure my ſelfe that thoſe that refuſe my Counſell will repent it.

Now to proceed according to my intended purpoſe; I will firſt declare divers experiments which I have ſeene in the fertilizing of land, and the cauſes thereof, as fully as I could diſcover them: wherein I chalenge no immunitie from being ſometimes miſtaken, no more then others that have written of theſe hidden and profound matters; and make no queſtion, but that when the light of truth and perfect knowledge, ſhall abound in the world, that then both they and I, in ſomething ſhall be found fooles upon record.

Yet as a Phyſician cannot attaine knowledge to cure all diſeaſes, yet hath not loſt all his labour, for that he hath attained skill to cure many; ſo my glimmering light in theſe matters, is better then none at all.

I have knowne a loade of Pigeons dung fetched ſixteene miles, and a loade of Coales given for it; which in the ſoile where it was fetched, would have done more hurt then good, for the manuring of land; yet where it was carried, it did as much good for the fertilizing of land, as double the charges; which might have beene effected as well by a compoſition of lime and common dung putrified together; the proportion being found by a few

few trialls in ſmall quantitie; whereby nine parts in ten of the charge might have beene ſaved.

For there is no difference of dungs, but as the incombuſtible aſtringent fatneſſe doth over-match, or is over-matched by the combuſtible; ſo it is more or leſſe apt for a cold, or an hot ground: whereby I conceive, that in the ſoile where the Pidgeons dung was fetched, the incombuſtible aſtringent fatneſſe did predominate; and in the ſoile where it was carried, the combuſtible fatneſſe did predominate; ſo that in one ſoile the Pidgeons dung cured the barrenneſſe, in the other it poyſoned the fertilitie.

I have alſo knowne many hundred loades of earth ſold for twelve pence a loade, being digged out of a meadow neare to *Hampton Court*, which were carried three or foure miles to the higher grounds, and fertilized thoſe grounds wonderfully, and recompenſed the labour and charges very well; which earth being laid upon arable land, within a furlong of the ſame meadow, did more hurt then good; the reaſon can be no other, but that the earth digged in the meadow did abound with the incombuſtible fatneſſe, being the reſidence of the water, whoſe propertie is to carry in his belly that kinde of fatneſſe, and to leave it in ſuch places where the ſlow motion gave it leave; whereby it had a propertie to fertilize the higher grounds, abounding with the contrary fatneſſe, and to poyſon the lower grounds, being over-charged with the ſame fatneſſe before.

I have alſo known ſtiffe clay grounds that would

ſeldome

ſeldome be fruitfull, unleſſe the ſeaſon of the yeare proved very proſperous, to have bin cured by laying thereupon a great quantitie of light ſandie ground; which afterwards was converted to a good temperament, like to the ſort of ground, commonly called, Haſell ground, which ſeldome or never faileth to be fruitfull.

I have knowne alſo light ſandie ground, which was good for little or nothing, cured by laying thereon a great quantitie of ſtiffe clay ground, which converted it to good temperament; where by it became fruitfull, and not ſubject to faile upon every light occaſion as it did before, but would abide varietie of weather according to the nature of Haſell ground.

And this Improvement is of no little value, for there is a great difference betwixt land that is ſubject to faile once in two or three yeares, and land thus improved that will not faile once in two or three and twenty yeares, through the diſtemperature of the weather.

And there would be many improvements of this nature put in practiſe, if there were a law, that every Tenant, if he were put out, ſhould recover double his charges of the ſucceeding Tenant; which may alſo be done by a Contract betweene the Landlord and the Tenant, if all would agree; and then men would labour cherefully, as for their poſteritie, if they were ſure that another ſhould not reape where they have ſowed.

And if men ſhould but ſpend their ſpare time in planting, graffing, and improving their land, which

now

now they looſe; judging it as good to play, as to worke for another; it would make an excellent mutation in Husbandry in an age or two, and very profitable for the generall good of the poſteritie.

For all men have a naturall proneneſſe to worke for their poſteritie, if they might be ſecured how they ſhould not be fruſtrated in their expectation; and the very bane of Husbandry at this day, is the incertaintie of their tearmes; as may be ſeene in *Ireland* at this time; where having a little more ſecuritie then in former times, they are more induſtrious, and live better then in former times, when there was not halfe ſo many in number.

Now to returne to my matter: I have knowne a wonderfull dammage in the North-Countrey, in the paſture grounds, by their growing with moſſe, which I have cured ſometimes with aſhes: and ſometimes that cure failed, by reaſon that the nature of the ground altered; and then I mixed lime with dung, and putrified it together firſt, and then laid it upon ſuch barren moſſie ground, and cured it.

And a worſe dammage then this, I found by Mole-hils, which were increaſed much in magnitude by Ants commonly called Piſmires, which I could never remedy by any other meanes, but by digging them into foure parts, and then paring away the earth, and laying the ground levell with the graſſe upwards, then the Ants died, or fled away, being a creature that cannot abide moiſture; therefore they raiſe their hils high from the moi-

ſture, and thereby dammage their Landlords extreamely; afterwards with a great buſh of thornes, I harrowed the looſe earth even with an Horſe; whereby it was much improved, and mainteined almoſt double the number of cattell which it did before.

I have alſo knowne certaine Acres of land taken out of a barren Common, which in a few yeares hath become worth foure times ſo much of the reſt that lay in Common: whereby it is manifeſt, that three parts of foure, of all Commons, are loſt for want of Husbandry; and to remedy this loſſe, there is no meanes but to incloſe the ſaid Commons, and then there is no queſtion, but if the Sheepe and Cattle which feede upon them, doe ſpend their dung upon them, and alſo be foddered upon them in the Winter time, that the dung bred by the hey comming out of the meadowes, which are fatted by the land-flouds, or by the *Perſian* Wheeles; a new Invention profitable to be practiſed here in *England*: that then they will increaſe in fertilitie every yeare more and more, untill they be as good as the Paſtures, which appeare evidently to have bin taken out of them in former times.

For the Commons are impoveriſhed two wayes by the accuſtomed ill Husbandry; the firſt is by driving the Sheepe from them with their full bellies, into the folds upon the arable land, whereby the one ground is impoveriſhed to fatten and inrich the other: the ſecond is by keeping them ſo bare, by reaſon that there is no ſtent of Cattle; ſo that

that a great part of the fatneſſe doth evaporate by the ſcorching heate of the Sunne into aire, and ſo is joyned with the common aire, for want of ſufficient receptacles to take that benefit.

For the chiefe skill in Husbandry is but to plant receptacles for the terreſtriall vapors which are ſeeds and plants: which is manifeſtly ſeene, for that a thouſand plants or trees will grow upon one Farme, as freely as one.

But this worke of incloſure will never take effect, unleſſe the ſaid incloſures be laid to the Farmers houſes onely; in regard that they onely have had that little profit of them which hitherto hath bin raiſed.

For none elſe have reaped any thing from them hitherto; for that the Gentries Cattle are uſually greater then thoſe barren grounds will mainteine, and the poore have few Cattle to put upon them.

Now whereas this worke muſt be done by the conſent of all parties intereſſed in them; elſe it is like it will never be done: let us conſider how all parties may be gainers by the worke, which will cauſe conſent, or elſe nothing will cauſe it: for if it be laid by indifferent proportions to the Farmers houſes, then will the Gentrie gaine by the improvements of their rents; and the Clergie by the improvements of their Tithes: both which hitherto have gained little or nothing; and the poore will gaine by their imployments in the ſaid improvements, which imployments they now want: yet I could wiſh that in every Pariſh where Commons are incloſed, a corner might be laid to

the poore mens houſes, that every one might keep a Cow, or for the maintenance of his familie; and the rather, for that they are the beſt ſervants to the Common-wealth: for how could the fields be reaped, or the corne thraſhed, or other works of like nature be done, if theſe were wanting.

Now it is requiſite to ſhew ſome invention for the improvement of the hay grounds: which will be much advantage for the fertilizing of the high barren grounds, by foddering the Cattell there in the Winter time. And for this purpoſe there cannot be a better way then that uſed in *Perſia* and *Spaine*, by water wheeles of thirty or fortie foote high, with wooden bottels which doe fill in the river, and empty themſelves above into a trough of wood, and ſo is carried to thoſe grounds where the Land floods never come to flatten them, and by this meanes the Meadow grounds for Hay may be doubled in many places, not onely in quantitie, but alſo in qualitie.

For I have knowne in *England*, where Hay ground worth but ten ſhillings an Acre yearely, hath been improved by meanes of this nature, that it hath borne Hay in ſuch plentie, that it together with the latter crop hath raiſed ten pounds upon an Acre: but this was in a dry Summer when Hay was very deare and ſcarce, and therefore is not perpetuall, but yet a ſufficient gaine may be alwayes hereby gotten: I know a man not farre from *London*, that by laying out three hundred ſhillings, improved his Land three hundred pounds *per Annum* by watering it onely, by raiſing the water with dammes

of

of earth, ſo that it might at his pleaſure over-flow his barren grounds, which profit might ſtill be doubled by this invention of the *Perſian* wheeles: whereby the water might be raiſed ſo high, that it would overflow the barren grounds higher, and broader then before by the halfe; and this water, if it come from Chalkie, or Limeſtone grounds, or be coloured with Land-flouds, doth fatten the ground wonderfully.

Of theſe Wheeles there is to be ſeene in *Perſia*, two or three hundred in a River, whereby their grounds are improved extraordinarily; and I ſee no reaſon but that good uſe may be made of them here in *England*.

And though this increaſe of fodder will be very conducible for the manuring of the high grounds, whereby they may gather fertilitie, by having the Sheepe and Cattle foddered upon them in the Winter time, whereby they ſhall not onely receive the benefit of the dung bred upon them, but alſo of this new Meadow-ground; yet my meaning is not totally to take away the uſe of the Sheep-fold upon the arable land; for in the great Corne Countries where the Sheepe are kept in the fields; there they doe good in keeping the fields bare, although they be folded in the night; and in the other Countries where there is not much Tillage, I would have all men to endeavour to make as much uſe of my inſuing experiments as they can poſſibly, with convenience; which will raiſe manure enough in moſt places, to ſerve their turne, ſo that they will not need to uſe the Sheepe-fold, where-

by one ground is ſo much impoveriſhed to inrich the other; and where there is no remedy, there they may drive the Sheepe to the fold out of the new incloſures, as well as now out of the Commons in the Summer time: but then the fertility of their new incloſures will increaſe much more ſlowly then otherwayes, if the Sheepe and Cattle ſhall manure them both in Summer and Winter.

I muſt needs confeſſe that the dung of Sheepe is a very temperate manure for much Corne ground, and is not ſo hot as Lime, Pigeons dung, or Poultrey dung; nor on the other ſide, ſo cold as Cow dung, or Oxe dung, and therefore to ſupply the place of it, there is required a compoſition of lime and dung together, which the proportion being found, and being laid interchangeably in leeres in a dunghill, and ſo let lie a certaine ſpace to putrifie and rot together, will ſupply the roome of the Sheepes manure moſt excellently.

Alſo in places convenient, I would have Ponds made to receive the water of Land-flouds, which once a yeare will yeeld great ſtore of good manure, but the beſt will be where the Land-flouds come from fertile fields, and from Townes: but eſpecially from Market Townes whoſe ſtreets are paved.

Alſo within the Tide worke, I would have ſluces in all your ditches that fence in your grounds, where the water may be let in ſwiftly, and after it hath ſettled cleere, then let it out very ſlowly, and it will leave a fat reſidence behinde it; for it is certain, that al the fat veines of Marle were left by the water

water in former times, by its ſlow departure from ſuch places; for it is manifeſt that all theſe varieties of earths have bin cauſed in former times by the various motion of the water, as may be ſeene by the difference betweene the earths fatneſſe in ſeverall places upon the Sea coaſt; for in *Devonſhire* the Sea leaveth a ſand ſo fat, that they carry it many miles on Horſebacke to manure land withall; and where it is laid, the fertilitie is increaſed wonderfully: but how theſe fat veines of Marle came to be laid in their places, is much controverted; ſome thinke by *Noahs* Flood; others hold, that all Land hath once bin Sea, and will be Sea againe by turnes in length of time; which opinion is not ſo frivolous as it ſeemeth at the firſt ſhew; for we ſee that the Sea doth continually get Land in one place, and looſe Land in another, and of that earth which the Sea carrieth in his belly, it leaveth the fatteſt part thereof in ſuch places, where it goeth out with the ſloweſt motion; which may be ſeene by experience in Rivers; for where the water runneth ſwiftly, it carrieth with it the whole body of the earth, and as the motion groweth ſlower, it leaveth it againe: firſt, the heavie gravell is left; next, the plaine earth is left; and laſtly, when it commeth to an exceeding ſlow motion, or ſtill ſtanding, there it leaveth his fatneſſe.

But whether all the Land hath been Sea, I make ſome queſtion: but it is certaine that a great part thereof hath been Sea: for peeces of Ships and Anchors have bin found in *Germany* two hundred miles

miles from the Sea, being covered with earth by the motion of the water: alſo divers Shells and other things have been found in *England* farre diſtant from the Sea: alſo the Hills and Dales upon the Land, doe ſhew plainely the worke of the water, even as the Claw of a Bear, or a Lion, doth ſhew by his print that a Bear or a Lion hath been in ſuch a place.

I have tried to putrifie water by it ſelfe, and alſo with helps, and doe finde that it may be done even as milke by helpe of rennet is curded into cheeſe; a thing that no man would beleeve, but that experience ſhewes it to be true; but as yet I have not brought the experiment to full perfection, and therefore as yet I will reſpit the publiſhing thereof: ſome experience hereof may be ſeene in the Moats and ſtanding Pooles which yeeld great ſtore of good Manure, and I wiſh that they were more made uſe of.

For I have ſeene much over-ſight committed by many Husbandmen, in letting out the putrified and coloured water from their Moats and dunghill Pooles, to the intent that the Manure in the bottome might be the ſooner dried in Summer, and fit for carriage to their Land; whereas all the water that was high coloured, might have been improved in ſuch frugall manner by a little induſtry, that it would have produced ſuch an increaſe of ſo much Barley, as would have made as much good drinke for the Husband mans proviſion, as the coloured water which was loſt.

And in this manner I would have it ordered: in the

the heate of Summer when the Sunne hath exhaled a great part of it, and that it groweth thickiſh and fat; then reſerve a good pit full thereof, well bottomed with Clay, that will hold water, and at Seed time ſteepe your Seed Corne in it, but put the fat water to it, by little and little as it drinketh it up: that at the laſt it may be almoſt dry of it ſelfe: but before it be full dry, ſift a ſmall quantitie of Lime amongſt it, that ſo it may grow dry with the Lime, and be like Comfits: then with this Seed Sow or Set your moſt remote ground from your Dung-hills, and by this meanes, you will ſave ten times as much labour in carriage of your dung, ſo farre as this labour cometh too, and as for your crop, though you ſhall not have ſo much increaſe as ſome have Mountebanklike reported of it, yet you ſhall have a good materiall increaſe for one crop onely, and corne thus ordered is not ſubject to be devoured of fowles when it is new ſowne.

The like infuſion may be made with Lees of Wine, Ale, Beere, Perry, Sider: alſo with Beefe-Broth, and the Brine of powdring Tubbs, and all ſuch liquors as conteine any fatneſſe, and theſe liquors are beſt mixed divers ſorts together where they may be had.

And I have ſometimes ſpritted the Corne a little as they uſe to do for Malt, and then have ſowne it, and it came up ſpeedily, and got the predomination of the weedes at firſt, and ſo kept the ſame: whereby I had farre greater increaſe then ordinary.

Alſo I found ſometimes when a dry ſeaſon came

upon the ſowing, that my Corne thus ordered took root far better then other mens Corn: who would not take this ſmall paines to ſteep it and ſprit it.

Now for the reſidue of your coloured fat water, it may be carried in great Tuns as the Salt-peter-men carry their liquors: and therein having divers holes, you may water your arable Land that lyeth next to your houſes: alſo you may get good quantitie of old Thatch or Straw, and ſpread it on the ground by the Pondſide in the heate of Summer, and ever at ſpare times as you ſee it dry, water it with a Scoope, but not ſo much, as that any ſhall run away, and continue this worke till all the fat water be dried upon it: then lay it on round heapes and let it rot into duſt: this duſt is little inferiour to Pidgeons dung for the manuring of Land, eſpecially, if you have dried great quantitie of the fat water upon it.

And I would have your Moats and ſtanding Pooles ſo placed, that all the Urine and fat moiſture of your Stables, beaſt-houſes, Kitchins, and other houſes of Office may deſcend unto it.

By theſe ſeverall meanes aforeſaid, you may double your quantitie of manure every yeare, and ſo conſequently the increaſe of your crops, if good heed be taken that none of your coloured fat water paſſe away: for there is a wonderfull fatning vertue in that part of the Manure, which is the moſt apt to diſſolve, and to colour the water.

And this fat Muſſelage being ſo apt to be carried in the belly of the Water at Land-floods, hath cauſed the valleys to be ſo fat and fertile, and the high ground to be ſo barren. Yet

Yet we ſee by manifeſt experience, that there is a remedy by induſtry to cure the barrenneſſe of the high grounds, for if we obſerve it well, we ſhall finde that the Farmers dwelling in barren ſoiles, are generally richer by their induſtry, then thoſe that dwell in the fatter ſoiles.

Now for ſo much as there is ſo great a difference of the nature of Land, and alſo there is ſo great varietie of the weather in theſe inſulary Countryes: there can be no abſolute rule preſcribed to hit the bird in the eye, in the compoſition of Manure for all ſorts of grounds and weathers.

Therefore every one is to make uſe of his owne experience, ſometimes in ſmall quantities, whereby many excellent and profitable experiments may be diſcovered.

And for his better furtherance to hit the marke, I will here ſet, downe, as plainly as I can, the cauſes of barrenneſſe in this kinde, which I finde to be theſe: when the combuſtible fatneſſe doth much predominate in any earth, as it doth uſually in the higher grounds; and the reaſon is, becauſe that the water is prone to carry the incombuſtible fatneſſe in his belly from the higher grounds, and to leave the ſame upon the lower and more levell grounds, and therefore that ground requireth Cowe or Oxe dung, which is combuſtible, to bring it to a good temperament; likewiſe the higher grounds require Lime, Aſhes, Chalk, Pigeonsdung, and Poultry dung, to bring them to a good temperament: for theſe two fatneſſes are of different nature, yet nothing increaſeth without them, both

mixed, for it is the nature of the combuſtible fatneſſe to grow ſoft, to rarifie and turne into a vapour by the heate of the Sunne; and of the incombuſtible fatneſſe to harden and coagulate by the heate of the Sunne, and by theſe two contrary qualities all riches are engendred.

Wherefore as *Actuarius*, the Phyſician ſummeth up all his Art in one line in theſe words: *In omni affectione morboſa contrariis eſt pugnandum:* So I ſumme my Art as briefely, viz. that every cure in Husbandry is to be performed by mixing the Land with a compoſition of Manure, contrary to that which cauſeth its barrenneſſe.

And oftentimes this labour may be ſaved by chooſing apt Seeds, and Plants: for ſome ſoiles which will not beare one thing at all, yet are very fertile in bearing another.

And this is the reaſon that the old ſaying is true, *Non omnis fert omnia tellus:* For where the Seed or Plant requireth a greater part of the one of the fatneſſes more then the other, there that Seed or Plant proſpereth, where the congruent fatneſſe doth predominate, which by its Magnetique vertue it is prone to draw to it; to increaſe his like according to the great *Magna Charta* or Grand-law of nature: whereas divers other Seeds or Plants, would not proſper at all in ſuch ground.

Whereby it is plaine, that as the various temperament of earths doe require various Seeds and Plants: ſo they doe require various compoſitions of Manure, to bring them to a temperament: which compoſitions can never be found out, but by

by practiſe and triall of ſundry concluſions upon ſmall quantities of Land, at the firſt, with ſundry compoſitions, as to mixe Lime with dung in ſeverall proportions with 2, 3, 4, 5, 6. or more to one, as occaſion ſhall require, and when the true proportion is found, then to proceed in greater works.

And I hold it good, that no Lime be laid upon the high ground, before it be quenched with ſome ſmall quantitie of Oxe or Cowe dung: for by this meanes the Land-floods are not ſo apt to waſh it away: for the Lime of it ſelfe is very apt to turne into Muſſilage with water, and ſo to be carried away.

Now to ſhew how theſe inventions and improvements are able to change the former practiſes in Husbandry, in ſuch manner, that the fertilitie may now perpetually increaſe, contrary to the former practiſe, whereby it yearely and hourely decreaſed; I will contract my experiments into a leſſer roome, whereby the memory of the Readers ſhall be leſſe charged.

And firſt it is manifeſt, that the Hay comming by the fatning and watering of the barren Land adjoyning to the Meadowes, by the *Perſian* wheeles, produceth dung, to fatten the high barren grounds by foddering the Sheep and cattell therewith in the Winter time: whereby one barren ground is made ſo fertile that it fatneth another.

Alſo the Muſſilage of water now gotten by Land-floods which before was loſt and carried into the Sea, doth helpe much for the ſame purpoſe.

Alſo the benefit of Moats and ſtanding Ponds

more then before, whereof great quantitie may be by induſtry produced, doth much helpe likewiſe for the ſaid purpoſe.

Alſo the new increaſe of Wood will make better proviſion of Lime then heretofore, which will be infinitely conducible to the ſaid purpoſe.

Alſo the Art of putrifying of Water, not as yet brought to full perfection, the beſt and moſt expeditious way will doe much good for the ſaid purpoſe: for though it be as yet a thing not fully perfected, yet it is not totally in the aire, for I can doe it already, but not in ſuch exquiſite manner for expedition in great quantitie, as I meane to do before I publiſh it.

And for preſent ſatisfaction, let all men know that the fatneſſe which is loatheſt to ſinke in water, is the moſt noble fatneſſe of all other, and not inferiour to Pigeons dung: for the reaſon why it is ſo loath to ſinke, is becauſe of its excellent temperament, being compounded of both the contrary fatneſſes formerly ſpoken of; ſo that the combuſtible fatneſſe in it being joyned with the incombuſtible, cauſeth it to be ſo loath to ſinke.

Now if all theſe new Inventions for the proviſion of manure ſhall double the former quantitie, as by indifferent induſtry it is very poſſible they may; then will the fertilitie be likewiſe doubled; and ſo conſequently the ſame quantitie of land being thus improved, will mainteine double the number of people.

For it is a ſtrange thing to ſee how little a quantitie

titie of land, will mainteine a family of people, being induſtriouſly improved.

Of which experience, none can better beare witneſſe then my ſelfe, whoſe Predeceſſors, though generouſly deſcended, lived well upon a ſmall Farme; and by their induſtry, mainteined, and educated their children, in manner not much inferiour to the ſons of the beſt Knights and Gentlemen in the Countrey.

And it is certaine, that there is ſufficient fatneſſe of both kindes in every Countrey, to bring all the Land to a good temperament and fertilitie; though it is diſcretion at the firſt, in ſuch places where it may be done with the leaſt labour and charges; for though the water carry the fatneſſe from the Land into the Sea in never ſo great quantitie, yet the Sea caſteth it forth againe in ſome place or other; whereby it may by induſtry be recovered in ſuch places, and new mixed by the ſound judgement of the Husbandmen.

For though I can ſcarcely beleeve that all Land hath bin Sea, viz. the great Eaſt and Weſt Countries, yet it appeareth evidently, that the greateſt part of thoſe great Countries have bin Sea, and alſo that theſe inſulary Countries have bin Sea totally.

For it is impoſſible that the water in the Deluge ſhould in ſo ſhort a time, make ſo great an alteration upon the Terreſtriall Globe, as is manifeſt it hath, by theſe enſuing demonſtrations.

Firſt, it appeareth in the Weſt-part of *England*, that though the waters in the Deluge might bring

that

that multitude of Firre-trees which are there found in the earth; yet it could not poſſibly cover them ſo deepe with earth, in ſo ſhort a time; it being found by experience, that where the water caſteth out earth, and heightneth the earth to get it ſelfe a Concave; there it doth that worke by litle and litle, in long time.

Secondly, it appeareth in the Eaſt-part of *England* in the Fennes, by ſhels, Anchors, and other things frequently found, that that ground hath bin Sea in former time; and the multitude of earth laid upon thoſe things, could not be done in ſo ſhort a time.

Thirdly, it appeareth that all *England* hath bin Sea; by the hills, and dales, and unevenneſſe of the ground: being evidently graven by the water, whoſe propertie is to weare the ground deepeſt, in ſuch places where the earth is moſt looſe, as it is in all vallies; and to ſpare it moſt, in all rockie and firme grounds, of which ſort the Mountaines are.

And this is more manifeſt by the Rivers which grind themſelves a paſſage into the Sea through the looſeſt earth, which is cauſe that they runne ſo crooked.

And this all Fiſhers and watermen can tell, for that they finde the water deepeſt in the looſeſt earth; and ebbeſt where it is moſt compacted and firme: for Mountaines and Vallies at land, are depths and ſhallowes at Sea.

Which thing conſidered together with the ſpeciall compaſſe of the Sea, acquiring his deepeneſſe by its elevation, more then by graving it ſelfe an hollow

hollow concavitie to abide in, doth ſhew that there is no ſuch impoſſibilitie for the Sea to alter his place according to the motion of the fixed cœleſtiall Orbs, which ſome thinke to be chiefely through the ſlow motion of the fixed ſtarres, and that it will make his revolution upon the earth, in ſuch time as the fixed ſtarres make their revolution in the Heavens; both which motions are ſo ſlow, that they are not taken notice of by men of vulgar capacitie; and though this thing be not generally received for truth; yet it accordeth with reaſon and poſſibilitie, as well as any opinion hitherto broched.

And the reaſon of this my relation is to good purpoſe, for by this meanes men may more eaſily finde out the fat veines of Marle, and know how to mixe their ground in ſuch ſort, that it may be brought to a fertile temperament where the water hath left it in an evill temperament; and for their furtherance, they may make balls of earth, of ſeverall ſorts, and burne them in the fire, and by their lightning in their weight in the burning, they may get ſome light how to mixe them, to bring them to a good temperament.

And I ſee no reaſon why Landlords ſhould be remiſſe in theſe trialls; for where a Lordſhip is diſcovered to have ſeverall earths, the one able to bring the other to a fertile temperament, there the rents will be wonderfully advanced.

Neither doe I ſee that men ſhould be remiſſe in this worke, becauſe that in length of time, all their land thus improved will become Sea: for the mo-

tion is ſo ſlow, that all eſtates are changed before there can be any materiall alteration; it being found by Mathematicians, that the fixed ſtarres make not their revolutions in leſſe time then thirty ſixe thouſand yeares.

And the reaſon why the earth is more compact and firme in one place then in another, can be no other then this; for that the ſubterraneall vapours doe impregnate it, and tie it together more firmely in one place then in another; whereof ſome of them are ſo ſtrong, as to turne it into rockes of ſtone; ſome able to glue it together like firme earth; ſome ſo weake, that the water is able to dig it, and carry it in its belly, to ſuch places where the ſlow motion thereof giveth it leave to ſinke.

And theſe are all the reaſons that ever I could conceive why the Sea is ſo various in its deepeneſſe, and alſo why the Land is ſo uneven with Mountaines and Vallies; being ſo wrought to that unevenneſſe by the water in former times: and I could wiſh that men ſhould not thinke their labour over-much in theſe workes; for that the riches this way gotten, are more durable then other riches; for that they are not gotten by the prejudice of others; which is manifeſted by divers examples; wherein the one is found to continue to many poſterities; the other to ruſt and grangrene in ſhort time into nothing.

CHAP.

CHAP. VIII.

Wherein is ſhewed, how to prevent the blaſting of Corne, and that the cauſe thereof doth not come through thunder and lightning, according to the common opinion, but through the deficiencie of the Husbandmens knowledge.

IT is found by a generall practiſe in the Vale of *Belvoire*, commonly called *Beavor*, where the beſt, and pureſt Wheate in *Europe* uſually groweth; that if the Farmers ſow their Wheate upon the fallowes, then it is uſually blaſted, by reaſon of the fatneſſe of the ground, which this graine cannot endure; but if they ſow it with Barley firſt, and Peaſon next, to abate the fertilitie, and overmuch fatneſſe thereof; then it is not ſubject to blaſting; by this it appeareth at the firſt ſhew, that the fatneſſe of the ſoile is the onely cauſe of blaſting: but upon better conſideration, I have found two other cauſes concurring to produce this effect, whereof neither of them are thunder and lightning, according to the vulgar opinion; for that would blaſt one eare as well as his next fellow growing ſo neare it; for what ſhould defend the

one more then the other; or what ſhould defend the Wheate ſowne, after the two crops of Barley and Peaſon, but the leanneſſe of the land; which the former practitioners this way not conſidering, ſpoiled their project, by over-fatning the ground; thinking thereby to regaine in the greatneſſe of the increaſe, the great charge and labour, which they were at in ſetting it the rude way with a board with holes in it.

And as for the other two cauſes of their failing, they were theſe: Firſt, in a moiſt yeare the immoderate raines joyned with the fatneſſe, and glutted the rootes overmuch with fatneſſe and moiſture together, which this graine will not ſuffer: Secondly, when the ground was not over-fat, yet the great raines carried downe the fatneſſe, into the lower places of the land, and ſo blaſted that Wheate which grew there, letting the other eſcape unblaſted, that grew upon the ridges, and on the top of the little furrowes; where the wet and fatneſſe deſcended from them ſpeedily, and did not overcharge them with fatneſſe and moiſture together.

I have pulled up a thouſand eares, both blaſted, and unblaſted; and have ſearched into the cauſes, as farre as my capacitie would extend, and can finde no other cauſe but theſe.

And it is certaine, that neither of theſe cauſes alone doth produce this effect, but both joyned together, viz. too much fatneſſe and moiſture, both at once: for the practitioners of this worke, in ſome dry and hot yeares, had extraordinary great increaſe,

increaſe, which animated them to follow it ſo fiercely divers yeares; there being no queſtion, but that elſe one yeares practiſe would have ſatisfied them; for they knew the great charge and labour in one yeare, as well as in many, and had increaſe when the drineſſe of the yeare ſerved to recompence all, or elſe they would have inſtantly ceaſed.

And it is as certaine, that moiſture without too much fatneſſe doth not produce this effect; for then it would doe it upon Wheate ſowne the third Crop, as well as upon the firſt; which ſometimes, in immoderate rainy yeares it doth upon ſome eares growing in the hollower places of the land, in the third Croppe; the reaſon is, as I ſaid before, becauſe the raine carrieth thither the fatneſſe of the higher ridges, and ſo overchargeth it in thoſe places with fatneſſe and moiſture together; for Wheate and Hops are both of a nature, they will not proſper but in moiſt ground; yet they are eaſily overcharged with moiſture: therefore as Hops muſt be hilled, that they may draw moiſture at pleaſure, and not have it forced upon them; ſo muſt Wheate, or elſe the Husbandman will be often fruſtrated of his expected increaſe; which our former ſetters of Wheate, not knowing, or at leaſt, not obſerving, had their Croppe ſo often blaſted, that at length their project was blaſted for want of judgement, and experience.

Alſo their tedious manner of going to worke, by diging their ground, and ſetting the Wheate with ſuch a number of workemen, for want of in-

vention, did make the loſſe more intolerable; for they hoped for a wonderfull increaſe, which ſome drie yeares they obſerved; but in moiſt yeares, their Corne was much more blaſted, then that ſowne the common way upon leane ground; whereby we ſee how eaſily a good cauſe may be ſpoiled.

Now to remedy all theſe inconveniences, there is no way but my two new Inventions, or Engines; the firſt remedieth the great charge and labour of workemen; for by this invention, two men, or boyes, may ſet an Acre upon a day; whereas before, fourtie perſons were little enough to doe it; and doth excell the old way in expedition, even as the Science of Printing doth excell writing.

And the other Engine doth afterwards lay the Land in little furrowes or ridges, juſt upon the top of the rowes of Corne: ſo that all the other inconveniences are remedied: for then neither Surpluſage of moiſture annoyeth it, nor froſt in Winter killeth it, lying at ſuch a convenient deepneſſe.

And this way the Land will abide to be made flatter then before, that it may produce a farre greater increaſe.

Alſo the Land need not to be digged this way, as they uſed to doe before: but onely ploughed, and harrowed, and then the Wheat ſet.

And you ſhall finde that the Wheat which will Sow one acre the Common way, will ſet ten acres this way, and notwithſtanding you ſhall have a farre greater crop.

And as for your Seed, you may if you pleaſe picke

picke it out of the middle of the eare for your triall in ſmall quantities, but when you deale in great quantities, you may hang a cloth over a beame in a long roome, ſo that the neather end lye upon the ground, and then with a ſhovell a great way off, you may caſt it over the beame in ſuch manner, that a fourth part thereof, or as neere as you can, may flye over the beame, and ſo be parted by the cloth, and you ſhall finde that fourth part larger and greater Corn then the other a great deale, which will ſerve for your Seed.

And in this manner may be ſet all manner of Corne whatſoever, and with the like utilitie.

But for Rie, (yet Rie will double the labour, if it be furrowed), Barley and other graine, you need not to make it into little furrowes and ridges, as you are to doe the Wheat, they being not ſo ſubject to blaſting, but the Wheat being to be ſet in moiſt Clay ground muſt be ſo ordered, to prevent the inconveniences aforeſaid, and where the ground is very moiſt, there the little furrowes and ridges muſt be contrary to the common way: for they muſt be made from the ridge of the Land, to the furrow of the Land, that ſo the moiſture may diſcend without drowning the corne, and in this manner you ſhall have almoſt as good Corne to the furrowes, as at the ridges which is ſeldome ſeene the common way; but many times the halfe Land is wholly killed with being overcharged with moiſture, and it hapneth well the common way, if upon due triall there be halfe ſo much Corne upon that halfe of the Land towards the furrow, as there

is

is of the other halfe towards the ridges.

And for more full ſatisfaction of this worke, I would have every one to try a few perches of ground, firſt, a yeare, two or three, which he may doe for ſo little quantitie, with a board with holes, five or ſixe inches, diſtant the old way, and then he may with a Spade for ſo little ground make it into little ridges and furrowes, and if he finde no inconvenience but the charge of many workmen, he may provide the Engines afterward, which will cure that inconvenience.

And I would have no man to lay an aſperſion upon this worke, or any of the other, before it be duly tried, whether it be a profitable invention or no: for if it be much availeable for the generall profit, then it is ſupported by many excellent examples in former time; for as I ſaid in the beginning, as the people grew more and more numerous, ſo they were more and more put to their ſhifts for inventions to get their livings: for when they were but few, they found maintenance out of Fiſh, Fowle, Veniſon, and other things afforded freely by nature: but afterwards they were glad to take Spades, and to digge, and from that to the plough, that chiefeſt of all Engines, and the manner of working they were glad to alter: for when Land came to be ſcarce for the maintenance of the inhabitants, they found the uſe of fallowing and manuring: whereby the Land got more fertilitie in one yeares reſt, then by the former way in many yeares, when they uſed to let it lye to graſſe for many yeares to gather heart of it ſelfe: by this in-

vention

vention a Countrey would maintaine double the number of people more then before, being onely thus helped by induſtry. Of theſe works *Salomon* meaneth where ſpeaking of the Husbandmans knowledge, he ſaith that his God hath taught him: the *Ancients* uſed to deifie their Inventors as *Bacchus*, *Ceres*, &c. and the wiſeſt of all that had more underſtanding then to thinke them to be gods, yet thought they were men in high favour with the gods: for that they ſaw their inventions proſpered, and tooke ſuch admirable effect for the generall good of the univerſe.

And I would have no man to ſpurne againſt theſe improvements, being ſo manifeſtly conducing to the generall good of all perſons and Common-wealthes: for if they doe, they will be found upon due triall by the judgement of the moſt underſtanding men in theſe affaires in the whole Kingdome, with whom I have conferred, to be contenders againſt the common profit, and wellfare of the Land.

And it is not intended that this worke of ſetting of Corne, ſhould be generally put in practiſe at the firſt: but in every place a little in the moſt convenient and apt places, that ſo the people may be well skilled in it, and fit to follow it more earneſtly in time of dearth and ſcarcitie, wherein ſo much Corne may be ſaved for preſent releefe and neceſſitie, that it will be as good as a generall Storehouſe for the whole Kingdome, for by this invention, we doe as it were borrow of nature a multi-

tude of quarters of Corne for preſent maintenance and foode till the enſuing Harveſt.

Becauſe that the gaine in deare yeares of Corne is ſo infinite in this worke; for the laſt yeare there might have beene ſaved fifteene ſhillings, beſides all charges, in every Acre of Barley, in the price of the Seede; and alſo the Croppe would have beene better by the leaſt as much more. I will here make a deſcription of the Engine, which elſe would puzzle the beſt Engineres in the World; for if it be ſet at convenient depth and diſtance, then there groweth no weeds at all, as I have found by good experience; for if the earth be equally charged with profitable ſeedes, then it produceth no weeds; elſe it will ſpend it ſelfe into weeds, or ſomething; for I have found double increaſe when I have ſet it foure inches diſtant, and about two inches, or two inches and an halfe deepe, more then when I ſet it deeper or thinner: therefore in regard that every good and expert Enginere may make the reſt of the Engines in this Booke, by the light therein given, I will trouble my ſelfe no more, but to let them teach the reſt; and ſo proceed to deſcribe this, that it may not be loſt in future time.

And thus I beginne my deſcription; let there be two boardes of equall breadth, boared with wide holes at foure inches diſtance, and be ſet in a frame two foote high, the one from the other.

Then let there be a funnell for every hole, made of thinne boardes about two inches ſquare.

Then for the top, let there be two thinne boards of

of equall breadth, boared likewiſe; whereof the uppermoſt is to be boared with an hot iron, with holes longer the one way then the other; and is to be of ſuch a thickneſſe, that but one Corne onely can lie in the hole.

The other board is be boared with wide holes, and to be looſe, that while the Engine is charged, the whole part may be under the holes of the uppermoſt board; and when the holes in the earth are made by the neather workes, then to be moved ſo, that all the Cornes may drop downe.

And for charging, a little Corne being ſwept up and downe by a broome, or a bruſh, will fill the holes; and if any miſſe, the workeman may put in here and there an odde Corne with his fingers, and then moving the ſecond board till the holes be anſwerable, all the Cornes will droppe downe at an inſtant.

Then let a large ledge be ſet about the toppe of the Engine, to keepe the Corne from ſpilling, and ſo is the upper part thereof made.

As for the nether worke, it is ſomewhat more chargeable and intricate; for there muſt be for every hole, a little ſocket of braſſe, caſt with a verge to naile unto the neather board about the hole, which muſt be turned, and boared, all of one wideneſſe to an haires breadth, and muſt be wide above, and ſtraite below, like a faucet.

Then there muſt be iron pinnes of five inches long, of great thicke iron wier, drawne ſo fit, that no earth can come into the braſſe ſockets.

Now to make theſe play up and downe at plea-

ſure, is the greateſt skill in the whole worke; and there is no other way, but that which is here deſcribed.

There muſt be for every woodden funnell a peece of iron forged flat, with an hole in the middle, edgwiſe; which through two ſlits in the neather part, muſt play up and down; through which a braſſe naile muſt be faſtened, caſt with an head, contrary to other nailes, bowing downewards, to which the iron pinnes muſt be faſtened with wiers, and ſo thruſt downe, and plucked up at pleaſure.

And then every end of the flat pieces of iron, muſt be faſtened into a piece of wood, of ſuch thickneſſe, that two thereof may fill up the diſtance betweene the rowes of the woodden funnels.

Theſe may be made to play up and downe like Virginall Iackes; and when they are lifted up, then the braſſe funnels being wider above then below, giveth leave for the Corne to fall into the holes, all an an inſtant.

Theſe Iackes muſt be faſtened together, the two firſt on either ſide of the wodden funnels; then ſo many together as the weight of the workemen is able to thruſt downe to make the holes.

And there muſt be a ſtay to hold up the Iackes at pleaſure, when they are lifted up againe to ſuch an altitude, as that the cornes may deſcend by them into the holes.

And the bottome of the iron pins muſt be flat, and by that meanes they will not be ſo apt tp draw up earth into the funnels; alſo the rootes of the

Corne

Corne will ſpread better, and bring a greater increaſe, if the ground be ſaddened a little in the bottome of every hole.

And the toppes of the iron pinnes muſt likewiſe be flatte, and hang a little looſe in the wiers; elſe if any of the braſſe ſockets get a little wrench, they will not be drawne thorow, becauſe the holes muſt be ſtraite.

Though the making of this Engine be ſomewhat chargeable and toubleſome, yet if skilfull men firſt breake the ice, then it will be common, and the moſt profitable Invention that ever was found out.

And the toppe of the Engine muſt be ledged about with large ledges, to keep the Corn from ſpilling; ſo will a quart or two of Corne ſerve a good while, and muſt be renewed upon occaſion.

And the neather halfe part of every woodden funnell, muſt be looſe on one ſide, to take off and on at pleaſure; to amend that which is amiſſe, upon every occaſion.

Alſo if the ſlittes in the funnels be lined with iron, the worke will be more durable.

But leſt that the charge of this Engine, together with the difficultie of getting it, may be a hinderance to the worke intended; I will adde a deſcription of a more eaſie way for the poorer ſort, which is ſubject to the capacitie of every ordinary workeman, and is made of wood onely; without either braſſe or iron: but herein I will tell no woers tales, but the worſt as well as the beſt, for theſe

Engines will not endure like the other; beſides that, there muſt be foure workemen, becauſe that the Engine muſt be made of two parts; the one to goe before and make the holes, the other to come after, and to drop in the Corne; this laſt muſt not differ a whit from the upper part of the former; onely it muſt have foure feete like toppes, in the foure corners, which muſt be ſet right in the holes, which are made by the other part which goeth before; which likewiſe muſt have foure ſuch feete, to leave an impreſſion when it is remooved forward, whereby the ſecond may be rightly placed, ſo that the Cornes may fall right into every hole.

That part which muſt make the holes, is to be made of two boards of equall breadth to the other, and muſt be boared full of holes, of equall diſtance likewiſe; the wooden pins muſt be greater then thoſe of iron; becauſe the holes will need to be ſomewhat large and wide; and they muſt be faſt in the upper board, and looſe in the neather board.

And if the Engine be large, as this way it may be larger then the other; by reaſon that it is eaſilier lifted and removed, being in two parts; then the upper part muſt be ſlit, and divided into ſo many parts, that the weight of the workemen by treading upon them, may preſſe them downe to make the holes.

And though this way will require foure workemen, yet the charge will not be double, nor much more then the former way; by reaſon that the workemen

workemen may goe forward with more expedition; and may ſet a broader compaſſe of ground at one time.

CHAP. IX.

Wherein is manifeſtly ſhewed the cauſe of the mildew, with the preventions and cures.

AS for the Mildew, it is a thing quite contrary to Blaſting, and is thus cauſed: When the flowers, and bloſſomes are in their pride, and fulneſſe, the Sunne by his heate, exhaleth ſome part of their ſweetneſſe, and converteth the ſame into Common Aire; which in the night is condenſed, and falleth into dew upon ſuch things as have moſt vertue attractive to draw it unto them: Of which ſort are chiefly the leaves of the Oake tree, next to that are Hops, next to that is Corne; this dew being unctuous and clammie, is apt to coagulate and harden by the heate of the Sunne upon the Corne the next day; and if it happen often to fall upon divers dayes together, and no raine come to waſh it off, then it getteth power to ſuffocate, and ſtrangle the vegetative vertue of the Corne; and ſo it withereth by the heate of the Sunne, whoſe heate before cauſed it to vegetate and multiply:

as

as for the remedy it is thus to be cured; let two men in the morning before the riſing of the Sunne, goe up and downe the furrowes of the Corne, and holding a cord ſtretched betwixt them, carry it ſo, that it may ſhake off the dew, which will eaſily be done before that the Sunnes heate hath exhaled the thinneſt part thereof, and cauſed the thicker part to be clammie and glutenous: and for better information of the time of this accident, let men obſerve when the Hive Bees goe abroad more early then ordinary, and let there be watchmen for this purpoſe; and to the end that all things might be conducible to the generall profit; I will ſpend a few lines in the commendation of this creature of God, the Bee; who getteth her riches totally, out of nothing bnt what elſe would be loſt; for whatſoever ſhe getteth, is that which the flowers by their attractive vertue draw to them in the night, out of the dew that falleth; and if the Bees ſhould not by their induſtrie, in the day time, fetch it away, the ſaid flowers would not draw the ſame the next night, and ſo the foode of honey would be loſt; for all foode is nothing but Aire congealed, which is manifeſt in the precedent, and enſuing diſcourſes: therefore ſeeing that theſe creatures are ſuch an excellent inſtrument to congeale Aire, I wiſh they were more made uſe of; for what were it for every one to have Bees, they aske nothing but an houſe rent-free to dwell in, and when they die, they bequeath their riches to their landlords: I have knowne many experiments tried to ſave their lives, by driving them, feeding them,

ſleeping

ſleeping them, that they ſhould not eate that in Winter, which they got in the Summer, but all was vaine; for what was gotten in the Eaſt, was loſt in the Weſt, and when all wayes were tried, the old wayes were found to be the beſt, and ſureſt: I muſt confeſſe, I have ſeene Bees driven into a new hive in the plaine Countrey, and ſo carried into the Forreſt, wherein the flowers and bloſſomes flouriſhed later then in the plaine Countrey, and by that meanes they got maintenance for the Winter following, but this was in a yeare when the weather was faire and proſperous all the while, during the flouriſhing of the flowers and bloſſomes in both Countries; which is a thing very ſeldome ſeene, and therefore I will adviſe no man to the practice, being ſo fickle and dangerous; for I love not to Tantalize men with vaine hopes, for *Tantalus* his Apples never filled the belly, nor the purſe; which was cauſe that I adviſe men ſo much to induſtry, as the ſureſt way for their profit, and wiſh that they may not be Tantalized by others, which tell them faire tales ſorting with their humours; thereby gaining opportunitie to make uſe of the moſt diſpoſitions, which are apt to give credence upon ſlight grounds, if the tale told be ſuch as they deſire to be true, though it be unpoſſible; according to the old Proverbe, *Quod volumus omnes facile credimus*: which is cauſe that ſo many are deceived in the world: for their conſtitution ruleth their paſſion almoſt generally, and their paſſion likewiſe overruleth their reaſon, ſo that he that looketh into the buſineſſe perſpicuouſly, thinketh

the world to be mad or fooliſh; and the world thinketh the ſame by him, as it was by *Democritus*, who through his contrarietie in conceit, to the vulgar multitude was deemed mad, though he had more wit then all the reſt; whereby it appeares, that ſtrong conceit, rather then ſolid underſtanding, beareth the greateſt ſway in the world; and there is another reaſon why I would have every one to have Bees, and that is, that they might be their Schoole Maſters, as well as their watchmen, to forewarne them of the mildew: for their induſtrious heed in this worke, that no opportunitie eſcape them to worke, while the time ſerveth for the generall welfare of their Common-wealth, declareth the admirable diſcipline of the great law of Nature, which they obey, and will by no meanes breake for any conceits, or private quarrells: and let me not forget to ſpend a little Inke and Paper about Hops. I have knowne a thouſand pound dammage in one Hoppe Garden in a weeke, or a fortnights time, by this Mildew: I have ſhaken ſome poles in the morning, and have found that it did good, by the difference betwixt thoſe, and the others; but I have not brought the experiment to full perfection, for want of oportunitie: I thought to have watered the Hops with ſuch ſpouts as are uſed in *London*, when houſes are on fire, by ſprouting up the water very high, that it might fall like raine, and performe the effect thereof; and let no man overvalue the charge, for one thouſand pounds worth of Hops being preſerved thns, when others neglect, the worke will be worth neere ten thouſand

thouſand pound: ſuch a yeare, when the greateſt part are ſpoiled by this misfortune; which is manifeſt by the difference of the prizes at Sturbridge Faire, and other places; being one yeare at twentie, or thirtie ſhillings a hundred, and the next yeare at ten pound a hundred: If any one will try this experiment fully, that hath better oportunitie then I have, and then publiſh it for the generall good, he ſhall be my brother; for that we are both of a Trade, or profeſſion, which ſhall be called Knowledge-mongers, differing from Fiſhmongers, Iron-mongers, &c. in that we pay ſo deare for our wares, and give them away for nothing, which is the cauſe why we thrive no better of our Trades; but let us not be diſheartned, for we will lay our heads together, to bring our Trade into requeſt, by laying open the benefit of our Inventions, and by diſcovering the vanitie of other devices, where one mans gaine cometh by anothers loſſe; ſo will the Major part come to us, through their good diſpoſitions, and love to vertue, honeſty, and goodneſſe, and ſo the reſt muſt come to us by force, or elſe want and povertie will expell them out of the Schoole of Huſbandry; and we will comfort our ſelves in the meane time, with the incomparable joy of a good conſcience, and feare no diſaſter in our enterpriſe, aſſuring our ſelves, that God is on our ſides, and ſo conclude with the ſaying, *Si Deus nobiſcum quis contra nos?*

CHAP. X.

Wherein is manifeſtly ſhewed the cauſe of the rotting of Sheepe, with the prevention and cure.

AS for the rotting of Sheepe, a thing which hath undone many an honeſt ſimple man, for want of knowledge to prevent it; I will proceed according to my wonted manner, to inveſtigate the cauſe, thereby gaining facilitie, to acquire the remedie; and for that the loſſe of the goods is not all, but that there is as great a loſſe in the fertilitie of the Corne ground which ſhould be manured by theſe cattle; I will uſe the more diligence.

It is certaine, that Sheepe, of all other Cattle, are of cold and moiſt conſtitution, which is evident, in regard they can live without drinking of water; though when they ſee it, they will ſometimes drinke; yet is it then but a fancie, in regard it is well knowne they can live well without it, and proſper as well as with it: this ſheweth that their livers are cold and moiſt of their owne nature, and cannot abide ſurpluſage of moiſture like other cattle; and therefore in a moiſt Summer they are troubled with this diſeaſe in the ſame ground, where

where in a dry yeare, they are not thereunto ſubject; the reaſon is, that in certaine grounds, the qualitie of the graſſe is changed with much moiſture, and aboundeth with the laxative, or rarifying ſort of fatneſſe, which is ſubject to diſſolve their livers, being the fountaine of liquor which ſhould moiſten their bodies with good juice; and through this diſſolution nature is not able to make due ſeparation of the nutrimentall part, but ſuffereth it to goe to the parts deſiring nouriſhment unſeparated, whereby their bodies are repleat with noxious and wateriſh humours; thereby cauſing death and deſtruction to the bodies thus diſtempered; as for the cure, it is difficult, unleſſe it be done betime, before the diſſolution of the liver be too far out of frame: the beſt way for their cure, is to remoove them to the ſalt Marſhes, or to the dry forreſt, whoſe nutriment is aſtringent, and faſtning, by reaſon of the incombuſtible and binding fatneſſe there predominating; but becauſe this remedy is not every where to be had, let us thinke of ſome univerſall remedy, of which ſort I know none, but vigilant providence, in due time to prevent it; and where I have had an intent to water Hay with ſalt water, ſo long as the ſaltneſſe would not cauſe them to forbeare to eate it; yet in regard I have not had oportunitie to trie the experiment fully, I will onely commend it as a probable, but not an approved medicine.

But to proceede to the preventions of this diſeaſe, the beſt part of Phyſicke; let every Harveſt, a certaine quantitie of the beſt Hay be laid apart for

this cattle; you ſhall know which is beſt for this purpoſe, by the conſtitution of it; for that which is hard, and of a drie nature is beſt, and that which is of a ſilkiſh ſoftneſſe is worſe; for the firſt ſtrengtheneth the liver, and the other looſeneth, and diſſolveth it; and the more their livers are ſtrengthned in the Winter time, by foddering them with the moſt aſtringent fodder, the better they will beare out a wet Summer; which is evident to be ſeene in a whole flocke, wherein ſome of the Sheepe having a more hot and drie liver, doe eſcape through their ſtrong conſtitution, differing as men doe one from another in nature: but that this prevention may not ſeeme frivolous, let us Philoſophize a little, about the nutriment, and the thing nouriſhed; which nutriment, though it be not able to change the forme of the thing nouriſhed, yet it is able to change its conſtitution; as may be ſeene by Birds feeding on Juniper berries, whoſe fleſh taſteth plainely of the nutriment: alſo Bees in the Forreſt yeeld a ſort of Honey, farre different from that in the plaine Countrey: and to make it more plaine, Sheepe that feede upon ſuch grounds as yeeld ſilkiſh ſoft graſſe, are ſooner rotted, then thoſe that feede upon a drier, and a hard graſſe, whoſe nature is aſtringent, and not apt to diſſolve their livers like the other: therefore for a ſecond remedy, I would have all ſuch hurtfull ground incloſed, and kept for other cattle; and in the meane time, let the Sheepe be kept from it in moiſt weather, and fed upon grounds which yeeld a more firme nouriſhment; ſo ſhall they be preſerved,

ved, and yeeld both food and clothing for men, which are the ſubſtance of all riches; in compariſon whereof, all the reſt are but complements, and trifles; for they yeeld a double nouriſhment; one way by their fleſh, another way by their manuring of land, thereby cauſing the increaſe of Corne, the ſtaffe of life.

Whereby it appeareth of how great conſequence good Husbandry is in a Common-wealth, viz. the very legges and pillars thereof, without which it cannot ſtand, nor by any other device, or policie whatſoever.

And therefore I would wiſh every well-willer to the publike weale, to be diligent in the furtherance of it; and to reade Maſter *Markham*, Maſter *Googe*, Maſter *Tuſſer*, Sir *Hugh Platt*, and others, who have manifeſted their good will, by publiſhing their knowledge in this behalfe.

And I deſire every one not to thinke much of his labour, to try experiments of this nature, whoſe effect, if they prove good, are beneficiall to all, preſent, and future; and not to be ſlacke, nor hard hearted, to publiſh the ſame; for that they are thereby recorded to be well-willers to that which every man is bound to by the great Law of Nature.

And if any man be negligent in this dutie, he doth manifeſt his unworthineſſe to all poſteritie; ſhewing plainely that he doth preferre his private gaine before the generall; which is a thing odious to all men of underſtanding.

And admit he be accounted a conceited fellow,

low, or one that runneth not the common way; yet in regard the common way leadeth to perdition, let him not deſiſt for frivolous aſperſions: for when light and truth ſhall appeare in the World, his worth ſhall ſhine, and not be eclipſed by the tongues of conceited fooles, and coxcombes, whoſe diſputations and reaſons ſeeme to be concluded, when the tune thereof fitteth the fancies of the hearers; then they deſire no other dance to be plaide upon thoſe tinckling inſtruments, but had rather heare the ſame plaide over and over; a thing tedious to wiſemen, though it were never ſo true; for Nature delighteth in vanities, and when truth ſhall appeare, and ſhine in the world, then theſe bables will be found as they are; nothing but the tinckling of the Aire, an element ſoft and pliable; and ſuch a thing which men can bowe, and bend to their purpoſe, like waxe at the fire, and make good every thing they ſay at pleaſure, be it ſo or not.

But then by their favours, they muſt have ſhallow brained Judges of their argumentations, and concluſions; who are like themſelves, deluded with their owne fancies; and have their reaſons obſcured by their paſſions; and theſe differ from madmen no otherwayes, but as the greater differeth from the leſſer thing of the ſame kinde; for though in mad men, it is a privation of reaſon, and in fooles an obſcuration, yet folly preceded, and cauſed the other; for though perhaps, ſome have had injuries enough to make them mad, yet it was their follies, that they did not rather ſuffer it with

with patience, then ſuffer their hearts to breake ſo untemperately with diſcontent; and ſo long, till the vapours thereof had lifted up ſo much melancholly to the braine, that it was therewith overwhelmed; and the curious Organs thereof, ſo obſtructed, and ſtopped, that it was afterward uncurable: Of which things, I wiſh every one to take heede betime; for when the Steede is ſtolne, it is too late to make faſt the ſtable doore.

I deny not but that in other yeares, and by much moiſture falling in other moneths, ſome few Sheepe of the moſt wateriſh, and flegmaticke conſtitution, may be caught with this diſeaſe; but this is not of that materiall conſequence which I aime at; my meaning being to prevent the grand inconveniences, cauſed by ignorance; as for thoſe which are more triviall, I deſire that every one may indeavour to prevent or cure, by his owne induſtrie; by adding ſomewhat of his owne for the full accompliſhing of the worke intended: and for his furtherance, I will here ſet downe the erronious opinions of many Husbandmen in this matter: ſome are of opinion, that much rainie weather in clipping time doth cauſe this effect, which is manifeſtly falſe; for that the ſame cauſe is in the ſalt marſhes and barren forreſts, where the rot never commeth, as is in the plaine and fertile fields; I denie not, but that the externall coldneſſe, and moiſture, when the Sheepe are new ſhorne, may be ſomewhat coadjuting to produce this miſchievous effect; but yet not the ſole cauſe, which I deſire may be prevented, by taking time to ſheare

Sheepe in faire and pleaſant weather, and to houſe them a day or two, upon urgent occaſion of ſudden, and great raine: If any one object, that no man knoweth how to chooſe this time; I anſwer him, that he may foreſee it by weather-glaſſes for that purpoſe; which I could demonſtrate, but that I delight not to plod on in common paths; but will rather referre him to Maſter *Bates* his Booke lately written, and intituled, *The Myſteries of Nature and Art*; wherein he may ſee the worke made manifeſt; and that ſufficient warning is given of all mutations of weather, by an infallible Prognoſtikative experiment: I have ſeene many of theſe glaſſes ready made fit, and ſold in the Glaſſe-ſhops in *London*; together with a printed paper ſhewing the uſe thereof; which will be profitable for the Countreymen for divers other occaſions as well as this; and every active handed man may make them the plaineſt way for twelve pence charge, which will ſerve as well as the beſt: others are of opinion, that Honey-dewes cauſe this effect; but this is falſe alſo; for there are more honey-dewes in ſound yeares for Sheepe, then in rotten yeares; and this is manifeſt, that in yeares when Sheepe are moſt ſubject to this diſeaſe, the Bees are likewiſe moſt ſubject to die in the Winrer time with famine; which may be diſcerned by the lightneſſe of their Hives in *July*; but this is not a generall rule for Hives in all Countries; for ſome yeares, when the Hives in the plaine Countrey are light, and not well furniſhed for maintenance in the Winter time; the ſame yeare Forreſt Hives are rich and heavie;

heavie; and the cauſe is, for that the weather was faire and pleaſant in the latter part of Summer, when the barren Forreſts flouriſhed; and foule, and rainie in the former part of Summer, when the plaine Countrey did flouriſh: and this is generally obſerved by my ſelfe, and my Predeceſſour, for the ſpace of threeſcore and fourteene yeares, that alwayes when the Hives of Bees were light, and not well provided for Winter, in the fertill Vallies the ſame yeare, the Sheepe died of the rot extreamely: which upon my firſt taking notice of, I thought that both theſe diſeaſes proceeded from one and the ſame cauſe; but upon further inveſtigation, it proved to be true in part, but not in the totall; for the multitude of raine in *May* and *Iune*, cauſed both theſe effects: but yet in the Bees it cauſed their ruine, by frequent waſhing of the honey-dewes, and alſo by hindring them from working in their beſt ſeaſon; and in the Sheepe, by producing frimme and frothie graſſe, abounding with moiſture, which theſe cattle can not beare; for if the graſſe be never ſo firme, yet ſheepe, though they never drinke, their bodies will yeeld Urine, contrarie to other Cattle; who if their meate be moiſt, drinke ſo much leſſe water, and thereby ſave their livers from diſſolution, and putrifaction: ſome have thought that the kells like cobwebs, have done this effect; but that is falſe likewiſe; for that they are as plentifull in the ſalt Marſhes, and barren places, as in the fertile grounds: ſome have thought that a certaine kinde of thicke-leaved graſſe, like almoſt to Purſlaine, hath done the miſ-

chiefe, but this is alſo falſe; for that the rot commeth where there is none of it: ſome have thought that the Land-flouds cauſed it, theſe have ſome hint of the truth, but not fully; for it is found by experience, that where the earth is fattened with Land-flouds in the neather part of the fertile fields, there the ſheepe are moſt ſubject to this diſeaſe; but the reaſon is, that there the graſſe is moſt frimme and frothie, and moſt abounding with moiſture in moiſt Summers; therefore let them be withdrawne to the higher places of the fields, in ſuch yeares onely, when the moneths of *May* and *Iune*, prove very moiſt and rainie, and the field is noonne: theſe things being duely obſerved, will produce more generall benefit, then many greater ſtudies; and ſeeing that Husbandrie did not onely build, but alſo maintaine all Schooles; I could wiſh that it was better fortified, being the very foundation of a proſperous Common-wealth; and if every one would equalize my benevolence, who have reaped double benefit out of the Schooles: we will erect a Colledge for Inventions in Husbandrie, in retribution of their former ſupplies to Learning; and ſo conclude, that *quid pro quo* is lawfull payment: this is one of the richeſt experiments in this Booke, and dependeth upon skill, more then upon corporall labour; and therefore I deſire that it may be thankfully accepted, and made uſe of; being a thing that no man could fully ever diſcover before my ſelfe; nor my ſelfe neither, but that I had helpe by the experience of my Predeceſſour.

And

And to the end that men may with the moſt eaſe prevent this great loſſe in their flockes of ſheep by rotting, let it pleaſe them to underſtand, that during my owne 24. yeeres obſervations, and for any thing that I can finde in my Book of 50. yeeres obſervations, there was never any materiall loſſe by this misfortune, nor any rot of ſheepe worthy to be taken notice of, but in ſuch years when the months of *May* and *Iune*, and eſpecially *Iune* proved to bee extreame moiſt and rainie weather: for I have obſerved that in ſome yeeres *Iuly*, *Auguſt* and *September* haue been ſo immoderate moiſt and rainie, that no hay nor Corne could be well gotten, but halfe ſpoiled with the foule weather, and yet notwithſtanding all this, there was no rot of ſheepe that yeere: the like I have knowne in *March* and *April*, and yet no rot at all that yeere: whereby it appeareth, that in the ſaid months of *May* and *Iune* immoderate raine doth produce that frim and frothy graſſe, which by its laxative and rarifying quality doth diſſolve and weaken the livers of the ſheepe more or leſſe according to the ſtrength or weakeneſſe of their livers before cauſed by nature, or by art helping nature: and alſo according to the greater or leſſer quantity of raine and moiſture in the ſaid months: and this accident commeth to paſſe uſually in low grounds, and ſuch as abound with the aſtringent fatneſſe, which in dry yeeres are as ſound as any other grounds: yet when they are ſo plentifully watered with much raine in the ſpring part of ſummer, the graſſe ſhooteth up ſo haſtily,

that the diſſolving and rarifying fatneſſe doth predominate in its compoſition: and changeth its nature ſo wonderfully, that it is able to worke this miſchievous effect: for it is cleere, that in winter when the graſſe groweth either ſlowly or not at all, there is none of theſe accidents, be the weather never ſo moiſt & rainy, neither in low fat grounds, nor in high barren grounds, neither in the latter part of ſummer, nor yet in the very beginning of the ſpring time, but only in the pride of the ſpring, *viz.* in *May* and *Iune*, and moſt eſpecially in *Iune*: Wherefore let every one trouble himſelfe no further, but to fodder his ſheepe in winter, with the moſt aſtringent fodder, according to my former directions: and withall to withdraw them from the frim and fat low grounds, to the more barren and dry grounds in the ſaid months of *May* and *Iune*, and eſpecially in *Iune*, in ſuch yeeres onely when thoſe months are extreme moiſt and rainie; and I will hazzard my reputation upon it, (which I value more than all the ſheepe both rotten and ſound in *England*, and never, as yet, forfeited the ſame in any affaires of this nature) that he ſhall never ſtand in need to lay the key under his doore, and bid good night to his Land-lord, through any prejudice which ſhall come to him through this misfortune.

CHAP.

CHAP. XI.

Wherein is ſhewed, that in theſe Ages, Inventions to ſave the number of mens workes, are not profitable to a Common-wealth overcharged with people, but rather the contrary.

AS for the new Inventions, for the ſaving of mens worke in an over-peopled Common-wealth, it is diſputable whether they be for the generall good or not; yet in regard that the chiefe policie conſiſteth in finding out wayes, how the ſame quantitie of land may maintaine more people then it did before, which cannot be done any way, but by induſtrie of the people; therefore I conceive, that in the new Inventions, it is for the generall good to ſave mens workes by Engines; for if one workeman can doe as much with his Engine, as ten men can doe without it, there is nine mens maintenance ſaved to the Common-wealth; whereby plenty is increaſed to every one: I muſt needs confeſſe, that if the common practice in Husbandry now uſed, was to ſet their Corne the common way, that then the Engine newly invented for that purpoſe

poſe, might doe more hurt then good; for that ſo many would then want imployment; as we ſee in *London*; there was an Invention to grinde the Needles many at once, whereby halfe the Needle-makers had gone a begging, if the new device had not bin reſtrained; but in this caſe it is farre other-wayes, for here is imployment for many more people then before; though there be many mens workes ſaved, which would be loſt working the rude way: alſo here is a great improvement in the quantitie of land; for by this meanes the new people ſet on worke doe get maintenance for many more then themſelves, by their induſtry upon the ſame quantitie of land which would maintaine but a few before. And it is to be conceived, that when theſe Inventions and Improvements ſhall be throughly put in practiſe, then the Common-wealth will not be overpeopled; but rather there will want people to accompliſh the worke, whereby it will appeare that the ſaving of mens workes will then be a profitable Invention.

CHAP.

CHAP. XII.

As for the Objections againſt any thing contained in this Booke, to free my ſelfe from all partialitie toward my owne ſide, I have here ſet them downe all punctually as they have bin objected by ſeverall Husbandmen, and others, in ſundry conferences.

Objection. I.

WEE finde in your Booke ſome things ſomewhat airie, and not ſo ſolid as we did expect; amongſt the reſt, you alleage that all riches are made of vapours congealed, and that you will teach us to congeale vapours at pleaſure, into as much treaſure as we liſt, and into what forme we pleaſe; if you ſatisfie us in this point, we will beare with all the reſt of your imperfections, for theſe are our chiefe deſire, and this worke being the ſumme of your Book, calleth your reputation moſt in queſtion, if you doe not performe your undertaking herein.

Anſwer.

It is plaine that all Trees, Plants, and Fruits, are

made of vapours congealed, for nothing vegetateth but in Summer when the heate of the Sunne is in force to rarifie and turne the ſaid fatneſſe of the earth into a vapour, and is more manifeſtly ſeene in *Greeneland*, where the heate is wanting, there the Aire is not able to erect it ſelfe into one Tree in the whole Countrey: and for a more full demonſtration of this my poſition, that all things are nothing but congealed vapours; let us conſider of theſe things following, viz. the raining of Frogges, Thunderſtones, Wheate, or a thing almoſt like to it: the cauſe of theſe things can be no other, but that when a convenient heate had almoſt formed them in their proper Spheare, viz. in the ſuperficies of the earth, then a greater heate accidentally comming, raiſed up the ſpermaticall ſubſtance thereof into the common Aire, and there hatched the ſame, till ſuch time as the magnitude and ponderoſitie thereof cauſed them to fall to their proper Sphere.

And as for the infinitie of this worke, it is plaine that a thouſand Oke Trees or other, will grow in one Farme in the hedgerowes, as well as one, and for the gaine thereof, what are they at the firſt, but a thouſand Acorns? the like is to be ſeene in Corne. I have had 38. eares of Barley, containing 1124. graines, come of one graine ſet in foure moneths: ſo we ſee there is no more to be done, but to learne to fit the ſeede to the ground and Climate, and then to plant it; and then we ſee that Nature is no niggard, but giveth riches to all

that

that are induſtrious, be their number never ſo much increaſed.

Objection. 11.

We finde a contradiction in your Booke, for in one place you ſay, that all riches are made of the fatneſſe of the earth, which is a combuſtible matter; as Oile, Greaſe, Roſen, Pitch, Tallow, Sulphure, &c. and in another place you ſay alſo, that Gold is made of the ſaid fatneſſe of the earth, which is a ſubſtance altogether free from burning, and is not diminiſhed in the fire; we would be reſolved, how theſe ſeeming contrarieties can be true.

Anſwer.

I ſaid that there is a double fatneſſe in every compounded body, the one combuſtible, and the other incombuſtible, which may be ſeene in the burning of the higheſt twigges of any Tree; for firſt there riſeth a ſharpe vapour in the burning, which is the univerſall ſpirit of the world, and the *vehiculum* which by the helpe of the Sunnes heate, lifteth up the former fatneſſe, then the combuſtible part conſumeth into aire by the fire; then the aſhes remaining, being laid upon land fatneth it, whereby a fatneſſe incombuſtible is diſcovered, and theſe two fatneſſes are in mineralls as well as vegetables, and of the incombuſtible and fixed fatneſſe minerall is Gold made by nature, and alſo by art, imitating Nature; and if any man doubt it,

let him hazzard a good wager upon it, which ſhall be equalized, and the queſtion ſhall be determined by the greateſt, viz. experience which admitteth no impoſture; yet I could adviſe my beſt friends that love to trie experience, to ſpend their money, time, and ſtudie upon Improvements in Husbandrie, being workes more certaine, and more profitable.

Objection. III.

We muſt needs confeſſe that barrenneſſe increaſeth by the uſuall practiſe in Husbandry at this day, and by the two wayes alledged by you in your Booke, viz. firſt, by the carrying of the ſheepe from the Commons with their full bellies into the Folds, whereby the one ground is impoveriſhed to inrich the other; and this we conceive may be cured by your new Inventions, for providing of manure which was neglected before: ſecondly, the Land is much impoveriſhed by great Land-flouds, which carry a wonderfull quantitie of fatneſſe yearely into the Sea, but how this ſhould be remedied we know not; we muſt needs confeſſe that your Inventions for the providing of manure more then before, are excellent good and profitable for the generall good, and will withſtand the barrenneſſe much; ſo that it will not increaſe ſo faſt as it did before: yet we conceive that barrenneſſe will ſtill increaſe, though more ſlowly; for all your multiplications of manure will not equalize, much leſſe overmatch the fatneſſe carried yearely by Land-flouds into the Sea.

Anſwer.

Anſwer.

It is certaine that the new proviſion of manure by Lime, aſhes, Marle, Muſſilage, and reſidence of water, and by the reſt of the Inventions, will equalize and overmatch the great quantitie of fatneſſe carried yearely into the Sea, if the ſame ſhall be induſtriouſly put in practiſe: the ſubterraneall vapours yearely elevate a great quantitie of fatneſſe, though in ſome places more abundantly then in others; for I have knowne arable land borne good corne time out of minde, with every third yeares reſt and fallowing, without any manure at all, but onely by this ſubterraneall vapour ariſing from ſome ſubterraneall fat ſubſtance: but though this be but in ſome ſpeciall places, yet there is no queſtion but that it helpeth well in all places, though of it ſelfe it be not ſufficient without addition of manure; bnt if all men would be ruled by me, we would not onely put theſe workes in practiſe very induſtriouſly for the generall good, thereby to teſtifie our love to all men both living, and yet to come; but alſo we would make uſe of my firſt Invention mentioned in my firſt Chapter, viz. to bow the knee of the heart, inſtead of the uſual and complementall bowing of the knee of the body, to the Donor of all goodneſſe; then might we have firme confidence, having formerly teſtified our love to God, by the generall love of all his creatnres, eſpecially thoſe of our own kind, that he would ſend the former and the latter raine in due ſeaſon, without

ſcanting us at any time, and pouring downe too much at other times, whereof we had experience this laſt yeere, wherein both theſe events have cauſed loſſe to this Kingdome above the value of 20. ſubſidies in one yeere: if this new invention were well put in practice, then would the heart-maker take away theſe our ſtony and hard hearts, and give us hearts of fleſh, and all mourning and lamentation for want of food would be done away: for then would our labours be ſeconded by the chiefe maſter in Husbandry, ſo that we ſhould no more bee fruſtrated of our expected Harveſt.

Objection 1111.

Wee finde your anſwers ſo ſatisfactory, that wee will make no more objections but this one, which we will almoſt anſwer our ſelves, which is this: wee muſt needs confeſſe that your diſcourſe concerning the preſervation of Corne from blaſting, is very rationall, and argueth much skill in Husbandry; yet whether the practiſe thereof will be anſwerable, though we ſee no cauſe to doubt thereof; yet being ſchooled by your ſelfe, wee will ſuſpend our full beleefe thereof, till experience teſtifie and manifeſt the truth, and wee deſire to be excuſed herein, becauſe it is your own counſell to us, wherein wee ſee not but that howſoever it proveth, you your ſelfe are out of blame, for that every man may try the truth thereof by your owne direction, without any materiall prejudice in ſmall quantitie at the firſt. Therefore if it may pleaſe you to ſhew us your

your new invented Engines, and the uſe of them, how the tedious labour of your new workes may be eaſed, then we will declare our opinions to all poſterity, and ſo take our leaves.

Anſwer.

Well, goe with me, and you ſhall receive as much ſatisfaction by demonſtration, as formerly by diſcourſe. You ſee here the experiment of my Perſian wheele; you ſee that it is 40. foot high, you ſee that the bottles doe fill in the River, and empty themſelves into a Trough 36. foot high, and the water is conveyed into yonder Ditch which is a mile long: you ſee divers ſtops in the Ditch, whereby the water is cauſed to flow over yonder barren ground, whereby it is become good medow; you ſee it is of no great coſt, nor ſubject to be out of order, nor doth require any great repaire; you ſee the motion is perpetuall, day and night, without looking to, if you were in *Perſia* you might ſee two or three hundred of theſe in one River: if the water come from chalky or lime-ſtone ground, or be mixed with land-flouds, then it doth fatten the ground wonderfull. Now looke upon my Engine, for the cleanſing of Thorny and rough grounds: you ſee the nether part is like a three grayned dung-forke onely, it is 40. times greater and ſtronger: you ſee the upper part is like a leaver, but ten times ſtronger, and very much longer: you ſee here a great buſh of Thornes and Briers together, which to eradicate the common way would

would ſpend a good part of a mans dayes worke: Now thus I ſet my Inſtrument halfe a foot from the root of it ſlopewiſe, then with an hedging Beetle I drive it in a good depth, then I lift up the ſteele of it, and put in the great iron pin to keep it ſtreight, then I take hold of the cord that commeth downe from the top of it, and pull it downe, and you ſee that in a quarter of an houre the whole buſh is wrenched up by the rootes. In this manner by 4. or 5. ſettings you may ſo looſen the earth about a great tree, that the next great wind will blow it downe. Now I come to my Engine for ſetting of Corne, which to bring to this perfection, hath coſt me 16. or 18. yeeres practiſe: you ſee that a man may ſet 1000. graines in the twinckling of an eye, and the charging and diſcharging of the graines at convenient diſtance is eaſie and expeditious, and you ſee that I make the holes for the grains to fall into with my foot and the weight of my body: you ſee that theſe Engines may be made of all magnitudes at pleaſure, and of all prices, from 10. ſhillings to 40. and he that had rather ſpare labour then mony may have a ſmall Engine; and hee that had rather ſpare money than labour may have a great one: you ſee how equally at diſtance it ſetteth the graines, ſo that no ground is loſt, as it is when the ſeed is confuſedly throwne with the hand, for there you ſhall finde that ſometimes there is a void place of a foot broad; ſometimes a dozen graines cloſe together, when as one graine in the place would produce as much increaſe: for I have had 1104. graines come of one, and 38. eares grow upon one corne ſet; you

ſee

ſee that either the Engine may be made fit for the Land, or the Land for the Engine, that the Engine may ſet a ſide of a Land from the ridge to the furrow at once, or being leſſer, at twice, or thrice at pleaſure.

You ſee the infinite profit of this worke, for by this worke the third part of the arable Land may be laid for Paſture or Hey ground, and the reſt will produce corne to maintaine the whole Kingdome: alſo you ſee the infinite profit that will ariſe in time of dearth, for by this meanes the Corne reſerved in Seed time, will releeve the Countrey of it ſelfe, which in former times hath been releeved by importation from other Countries, whereby the wealth of this Kingdome hath been ſo exhauſted, that they have not recovered the ſame in many yeares following; which inconvenience might have eaſily been remedied by this invention: you ſee here my Engine for the making of the little ridges and furrowes; you ſee how neatly it layeth the earth in little furrowes juſt upon the rowes of Corne: you ſee that it maketh divers ridges and furrowes at once with good diſpatch: and it may be fitted to be drawn with Horſes, or to be wrought with mens ſtrength in ſuch wet grounds, where it is convenient that the little furrowes be deſcending from the ridge of the Land to the furrow of the ſame.

If I finde the like good acceptance in generall, which I have found at your hands, and at the hands of all that I have hitherto acquainted with my endeavours, of which ſort many of them have been of the moſt ſolid and judicious men in the Land in theſe affaires: then will I act out my part, and like

as hitherto I have acted the part of a torch which conſumeth it ſelfe to give light to others; ſo will I doe the reſt of my life, and furniſh you with more and more new inventions and improvements, and will furthermore publiſh my Booke of experiments, which hath been my whole lifes practiſe, which I have preſumed to intitle with the name of *Arts Miſtreſſe*: for that all queſtions therein handled, are determined by irrefragable demonſtration and infallible experience, which Booke containeth many notable experiments: whereof ſome are for gaine, ſome for health: ſome for pleaſure, and ſome for prevention of loſſe, to thoſe who are naturally inclined to trie experiments, wherein my failings, as well as my proſperings are truly laid downe, and ſo plainly, and with ſuch cautions, that it will ſave much ſtudie and labour, and many millions of money, which elſe will be ſpent in future ages by trying the ſame againe by men of ſuch inclinations, to whom it is as great paine to forbeare ſtudie, as it is to the others to ſtudie at all: and for a farewell to both natures, I wiſh that thoſe which love not to trie experiments may take their eaſe, and will lay no heavier taske upon them, but to wiſh well to the others, and the more to ſtirre them up to this charitie, I deſire them to remember themſelves what caſe they had been in, if ſome inventive braines had not found the plough and the uſe thereof, alſo if ſome of like diſpoſition had not found out new wayes for the manuring and fertilizing of land afterwards, when Countries grew too ſtraite for the numerons increaſe of people: Alſo I deſire them to ponder well upon the matter contained in this Booke, and to conſider well in what caſe their poſteritie will be in two

or three ages hence, if no new Inventions and Improvements ſhall be from henceforth put in practiſe.

And for a finall concluſion, I will ſweepe up the houſe with a beeſome made of my owne follie, which ſhall be recorded againſt me, if hereafter I ſhall grow proud of my skill: for what am I but a piece of earth quickned and animated by the univerſall ſoule of the world? and what knowledge have I, but what every one may have if he follow my ſteps, viz. if he bow the knee of the heart to the donor of knowledge and underſtanding, and withall, digge for it as for treaſure, by trying experiments to bring truth to light? and what excellent conſtitution have I to ſecure me, that I be not deluded by my fancy?

There needs no more demonſtration of my folly, but my mad election of the time to publiſh theſe my Inventions; when men are ready to throw the Plough in the ditch, through a frivolous diſcontentment; which is manifeſt by their neglect of things which they know already; and therefore they are very unapt to be drawne to new Improvements; alſo their fisking away into the new Plantations ſo faſt, ſheweth that they had rather be exiled from their native Countrey, then to be diſciplined by any new Inventions; which I make no queſtion, but they will be called Innovations by many, whoſe judgements are ruled by their evill conſtitutions.

To demonſtrate the truth of theſe my relations, there needeth no more but to ſhew their follies, which are in my conceit as frivolous, as if an Husbandman ſhould loſe a good ſheepe for a licke of

Tarre: for what is two pence, foure pence, or ſixe pence upon an Acre of ground, in compariſon of what may be raiſed out of it by induſtrious Improvement; the paiment of a little, for the preſervation of much, is in my conceite, a good bargaine, and the preſent grudging and murmuring at the payment of money for the ſafeguard of the reſt, is a conceited folly.

But for that I would be excuſed from partialitie, I will hereby teſtifie my uprightneſſe, for I will neither flatter the one nor the other, but declare my owne fancie; for I will not cologne with my Prince for preferment, nor comply with the ſubject for any reſpect whatſoever; but according to my wonted manner, ſhew to the utetrmoſt of my skill, what is beſt to be done for the generall good; that is, if all would be ruled by me, we would fall to worke bravely, and then we ſhall be able to give the King twice as much money as he hath occaſion for to make uſe of for our defence, or his owne honour; and the reſt will be more then we neede for our ſelves; for Nature is no niggard, but bountifully feedeth all her gueſts, be their monthes never ſo many, if they will but take a little paines to cut out their meate by the wayes preſcribed in this little booke: I muſt needs confeſſe that at this time many are ill enough able to pay their money for the defence of the Kingdome; but where is the fault? Is it not in our ſelves? I am aſſured that there is more good and apt land to extract riches out on, in *England*, *Scotland*, and *Ireland*, then is in all *Spaine*; and now we have knowledge how to doe it, ſo that there is nothing wanting but willing mindes; and why men ſhould be backward in this worke, I can finde no reaſon, but their evill conſti-

tutions cauſing them to be averſe to the generall good; and then if they ſay they love God, or pretend any good Religion, they will bridle theſe evill affections; for elſe no man of underſtanding will beleeve them; for indeede they doe but ſay ſo, and flatter themſelves with their deluded fancies; and as for reward for their worke it is ready, in regard that many of my Inventions and Improvements doe conſiſt upon skill and vigilant providence, rather then upon corporall labour; and thoſe which doe conſiſt of labour, bring a preſent and ſpeedy profit. As for thoſe which bring not a preſent profit, it is fit that the Landlord ſhould be at the charge, for that the yearely value of his land is advanced, even as it is in *China*, where they lay that fine earth wherewith they make their curious veſſels in the wombe of the earth to digeſt many yeares, and as the yeares paſſe on, they ſell it one to another, every ſeven yeares dearer and dearer, till that it be brought to perfection; which time being knowne by experience, they have a kinde of reaping of benefit by it every yeare, notwithſtanding the length of time betweene the worke and the wages or harveſt.

And let no man for any diſcontent whatſoever, though it were juſtly conceived, neglect the future happineſſe and flouriſhing eſtate of this kingdome; for I will lay my life at the ſtake, that if this worke ſhall be well carried, there is tenne times as much riches clearely given to the Common-wealth preſent and future in this little booke, as all the Inhabitants and their Predeceſſours have ever paid to Church and King in their dayes ſince it was a Kingdome: for partly by the prevention of loſſe in the

blaſting and mildewing of your Corne, and in the preſervation of your Sheepe from rotting, and partly by the benefit of all other my Inventions and Improvements duely practiſed, there will ariſe a gaine ineſtimabe and infinite, not to be exhauſted by time: ſo praying to God the Creator of all, that it may doe as much good as I intended, I humbly take my leave, deſiring your prayers onely for me and my poſteritie; for I crave none of your riches.

The Poſtſcript.

AS for faults in my Coppy, I ſee a thouſand my ſelfe; and make no queſtion but that others will eſpie many more; yet in regard that my conceit telleth me, that though *Cicero*, and *Demoſthenes* had laid their heads together in the opening of it; yet every one would expound the ſame to their beſt advantage; which being a thing that I deſire, I will therefore trouble my ſelfe no more about it, but commit it to the Worlds cenſure in its rude veſture; and I muſt needs confeſſe that my owne fancie hath a little withdrawne me from publiſhing all that I know in theſe affaires, being conceited that it may prejudice me hereafter, for that Nature will not ſhew her ſelfe naked to any blabtongue; in the beholding of whoſe beauty is my chiefe delectation. I have as good a minde to it, as to any temerarious enterpriſe that ever I tooke in hand, to try my cunning to ſtrike off at one ſtroke the head of that ougly monſter, Covetouſneſſe, by taking all danger of future want cleare away, for then none but fooles would be covetous; but the danger that two worſe heads, viz. Pride and Luxu-

rie would ſpring up in the roome, ſtayeth me: therefore I not knowing ſo well how to cut off thoſe heads, will reſt my ſelfe awhile, waiting with patience to ſee the ſucceſſe of theſe my labours. It may be theſe things publiſhed already will be ſome good meanes to metamorphiſe that monſter really into good Husbandry and godly providence, under whoſe habite he loveth ſo well to hide his ugly face; which in my opinion, is the ſureſt way for the well ordering of the Univerſe: for as it is holden a frivolous thing to hoord up Snow in *Frieſland*, where there is never like to be any want thereof; ſo would it be holden here to hoord up riches, being nothing but congealed Aire, or vapours which are not likely ever to be wanting here, if the art of doing the ſame the eaſieſt way ſhould be fully diſcovered; for then not onely covetouſneſſe would ceaſe, but alſo providence would be endangered to be thruſt out of the Schoole, which is inconvenient; here is maintenance in this book diſcovered for many Ages, though Warres ſhould ceaſe and people ſhould increaſe marvelouſly; yet at length there will be jarring and jangling againe, when the people grow too numerous for their maintenance, and then if God be not pleaſed to teach them new Improvements, they will doe as they doe now, viz. like as when tenne dogs have tenne bones, every one lieth downe quietly and gateth his bone; but if there be but nine bones for the ten dogs, then the odde dog ſetteth all the reſt together by the eares: ſo will it be with men when their foode groweth too ſhort for their number; and this is manifeſt by the former practiſes of the World: for when they had peace and plenty, and were

were not ſcanted of foode and maintenance, then they builded Churches, and did many worthy workes; but when jarring and jangling came through want thereof, they grew ſo farre off from building of Churches, that they would ſcarcely repaire the old ones; and did as they doe now, ſpend their thrift in miſchievous contentions.

But that I will not altogether feede the World with *Tantalus* his Apples, I will give them one bit in this manner: when theſe Inventions and Improvements contained in this Book ſhal be ſtretched to the higheſt, and will ſerve no longer for the maintenance of the numerous increaſe of people; then let them beginne a new leſſon: and whereas in former time it was an excellent Improvement to teach Horſes and Oxen to doe the workes of men, by which men were ſpared to be Princes, Governours, and Officers in Common-wealths; ſo then there being no neede to increaſe the number of thoſe; let the new increaſe of people be imployed in ſpade-worke, by which meanes every Acre of land may be improved ſeverall wayes to be foure times as good as now the common way; beſides that, the ground which now Horſes and Oxen doe eate up, may then be improved in like manner, for the maintenance of men; whereby they may live well, and not have any intolerable ſlavery; for that there need iſſue but little out of every ones labours to Church and King by reaſon of their wonderfull number.

FINIS.

HIST. LONDIN. UNIV.